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Caregiver Preparedness and Associated Factors in First-Ever Post-Stroke Dysphagia: A Cross-Sectional Study

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Abstract: ***Objective:*** *To investigate the level of caregiver preparedness among family caregivers of patients with first-ever post-stroke dysphagia and to identify factors associated with preparedness.* ***Methods:*** *A cross-sectional survey was conducted among 154 family caregivers of stroke patients with dysphagia. Data were collected using a general information questionnaire and the Caregiver Preparedness Scale (CPS). Because CPS scores were not normally distributed, the Mann–Whitney U test and Kruskal–Wallis H test were used for univariate analysis. Variables with P < 0.05 in univariate analyses were further entered into a multiple linear regression model.* ***Results:*** *The total CPS score was 15.69±3.81. The highest-scoring item was "overall preparedness to care for the patient" (2.47±0.88), while the lowest-scoring items were "access to medical resources" (1.30±0.79) and "coping with caregiving stress" (1.45±0.67). Univariate analysis showed that feeding method, caregiver–patient relationship, cohabitation status, and receipt of dysphagia-related caregiving guidance were significantly associated with caregiver preparedness (all P < 0.05). Multiple linear regression showed that feeding method and receipt of dysphagia-related caregiving guidance were independently associated with caregiver preparedness (both P < 0.01).* ***Conclusion:*** *Family caregivers of stroke patients with dysphagia have a relatively low level of caregiver preparedness, with notable deficiencies in accessing medical resources and managing caregiving stress. Structured dysphagia-related education and continuous professional support may help strengthen caregiver preparedness; however, further longitudinal or interventional studies are needed to verify causal effects.*

Keywords: Stroke, Dysphagia, Family caregivers, Caregiver preparedness, Influencing factors.

1. Introduction

Post-stroke dysphagia (PSD) is one of the most common and clinically important complications following stroke. International guidelines indicate that PSD is present in more than 50% of patients with acute stroke and is associated with aspiration pneumonia, malnutrition, dehydration, poor functional outcome, and mortality [1]. A recent meta-analysis further reported that the pooled prevalence of dysphagia in acute stroke was approximately 42%, and that PSD was associated with a substantially increased risk of pneumonia and mortality [2]. Therefore, PSD should be regarded not only as a swallowing disorder but also as an important patient-safety issue across the transition from hospital to home.

The high-risk status associated with dysphagia may persist beyond the acute stage of stroke care. Arnold et al. reported that dysphagia persisted in 50.9% of affected patients at hospital discharge [3]. Consequently, responsibilities for safe feeding, diet consistency modification, oral care, tube-feeding management, and recognition of aspiration-related warning signs are frequently transferred from healthcare professionals to family caregivers in the home setting. Current stroke best-practice recommendations emphasize that patients, family members, and caregivers should receive interdisciplinary education on swallowing, prevention of aspiration, and feeding recommendations [4]. Qualitative evidence also shows that family carers often need to facilitate safe swallowing, modify food or fluids, or administer tube feeds after stroke [5]. However, family caregivers who are confronted with this situation for the first time often lack sufficient knowledge of dysphagia and experience in providing appropriate care. As a result, they may experience considerable psychological stress and uncertainty, which may affect safe and effective home-based care.

Caregiver preparedness is a multidimensional construct that reflects caregivers' perceived readiness to provide physical care, emotional support, service coordination, emergency handling, and stress management [6]. The Caregiver Preparedness Scale has been validated among caregivers of stroke survivors and may help identify caregivers who need additional professional support [7]. A recent meta-analysis suggested that caregiver preparedness among post-stroke caregivers is generally low to moderate and is influenced by patient-, caregiver-, and stroke-related factors [8].

Although caregiver preparedness has been examined in general post-stroke populations, evidence focusing specifically on family caregivers of patients with first-ever post-stroke dysphagia remains limited. Therefore, this study aimed to investigate the current status of caregiver preparedness among primary family caregivers of patients with first-ever post-stroke dysphagia and to explore factors associated with caregiver preparedness. The findings may provide evidence for developing targeted interventions and support strategies for family caregivers in clinical practice.

2. Methods

2.1 Study Design and Participants

This cross-sectional study was conducted from July 2025 to March 2026. The reporting of this study was guided by the Strengthening the Reporting of Observational Studies in

Epidemiology (STROBE) statement [9]. Using a convenience sampling method, patients with first-ever post-stroke dysphagia and their family caregivers were recruited from the Departments of Rehabilitation Medicine and Neurology of two tertiary Grade A hospitals in Baise, China. Ethical approval for this study was obtained from the institutional ethics committee (Approval No. KY2025111217). Written informed consent was obtained from all participants before data collection.

2.1.1 Inclusion Criteria

Patient–caregiver dyads were eligible for inclusion if they met all of the following criteria:

1) The care recipient had experienced a first-ever stroke confirmed by computed tomography (CT) or magnetic resonance imaging (MRI), was in a stable medical condition, and had clinically relevant post-stroke dysphagia, defined as a Kubota Water Swallow Test grade of ≥2 combined with a Functional Oral Intake Scale (FOIS) score of ≤ 5 [10, 11]. This combined criterion was used to ensure that the enrolled patients had swallowing impairment accompanied by restricted functional oral intake rather than normal or nearly normal swallowing function.

2) The caregiver was a family member who assumed the primary caregiving responsibility and provided care for at least 4 hours per day. In cases where multiple caregivers were involved, the caregiver who spent the longest time providing care, or who lived with the patient and was mainly responsible for meal preparation and feeding, was selected.

3) The caregiver was aged 18 years or older.

4) The caregiver had basic reading, writing, and comprehension abilities, had no language, hearing, cognitive, or communication impairments, and was able to communicate effectively and complete the questionnaire independently.

5) The caregiver provided written informed consent and voluntarily agreed to participate in the study.

2.1.2 Exclusion Criteria

Patient–caregiver dyads were excluded if any of the following conditions applied:

1) The patient's dysphagia was caused by conditions other than stroke, such as head and neck tumors, neurodegenerative diseases, or other non-stroke-related disorders.

2) The patient had severe dysfunction or end-stage failure of major organs, including the heart, lungs, liver, or kidneys, or had advanced malignant tumors.

3) The caregiver was not a primary family caregiver, such as a paid nursing assistant, domestic helper, or other professional caregiver receiving financial compensation.

2.2 Instruments

2.2.1 Demographic Characteristics Questionnaire

A self-designed questionnaire was used to collect demographic and clinical information on both patients and caregivers. Patient-related variables included age, sex, educational level, stroke type, type of medical insurance, modified Rankin Scale (mRS) score, National Institutes of Health Stroke Scale (NIHSS) score, FOIS level, and feeding method. Caregiver-related variables included age, sex, educational level, marital status, occupation, monthly household income per capita, daily caregiving duration, relationship to the patient, cohabitation status, previous caregiving experience, and whether the caregiver had received dysphagia-related caregiving education or guidance. Clinical variables were obtained from medical records or assessed by trained researchers.

2.2.2 Swallowing Status Assessment

Swallowing status was assessed using the Kubota Water Swallow Test and the FOIS. Water-swallowing tests are widely used bedside screening tools for dysphagia and aspiration risk in patients with stroke [11]. The FOIS is a seven-level ordinal scale used to evaluate functional oral intake in patients with dysphagia, and its psychometric properties have been established in stroke populations [10].

2.2.3 Caregiver Preparedness Scale

Caregiver preparedness was assessed using the Caregiver Preparedness Scale (CPS), which was developed by Archbold et al. [6]. The Chinese version was translated and culturally adapted by Liu et al. [7] with permission from the original author. The scale comprises eight independent items, each scored on a 5-point Likert scale from 0 ("not at all prepared") to 4 ("very well prepared"), yielding a total score ranging from 0 to 32. Higher scores indicate greater caregiver preparedness. The Cronbach's α coefficient of the Chinese version was reported to be 0.925.

2.3 Statistical Analysis

Data were analyzed using SPSS version 27.0 (IBM Corp., Armonk, NY, USA). Continuous variables were expressed as mean ± standard deviation (SD) or median (interquartile range, IQR), while categorical variables were presented as frequencies and percentages. The Shapiro–Wilk test was used to assess the normality of continuous variables. Because CPS scores were not normally distributed, the Mann–Whitney U test was used for comparisons between two groups, and the Kruskal–Wallis H test was used for comparisons among three or more groups.

Variables with $P < 0.05$ in the univariate analyses were entered into a multiple linear regression model to identify factors independently associated with caregiver preparedness. The total CPS score was treated as the dependent variable. Feeding method, caregiver–patient relationship, cohabitation status, and receipt of dysphagia-related caregiving guidance were entered as independent variables. Categorical variables with more than two categories were transformed into dummy variables before model fitting. In the regression model, oral feeding, spouse relationship, living with the patient, and receiving dysphagia-related caregiving guidance were used as reference categories. Multicollinearity was assessed using

variance inflation factors (VIFs). Statistical significance was defined as a two-sided P value < 0.05.

3. Results

3.1 Characteristics of Patients and Family Caregivers

A total of 154 patient–caregiver dyads were enrolled in this study. Among the patients, 101 (65.6%) were male and 89 (57.8%) were aged >60 years. Ischemic stroke accounted for 63.0% of all stroke cases. More than half of the patients had an mRS score >3 (55.2%), and 72 patients (46.8%) had an NIHSS score >5. Regarding swallowing status, 45 patients (29.2%) had FOIS levels 1–3, indicating severe restriction of oral intake, whereas 109 patients (70.8%) had FOIS levels 4–5, indicating restricted oral intake without full functional oral intake.

Table 1: Characteristics of Patients and Family Caregivers (N = 154)

Variable	Category	n (%)
Patient characteristics		
Sex	Male	101 (65.6)
	Female	53 (34.4)
Age (years)	≤60	65 (42.2)
	>60	89 (57.8)
Educational level	Junior high school or below	133 (86.4)
	High school or abovel	21 (13.6)
Stroke type	Ischemic stroke	97 (63.0)
	Hemorrhagic stroke/others	57 (37.0)
Type of medical insurance	Urban employee insurance	81 (52.6)
	Urban resident insurance	47 (30.5)
	Self-pay	26 (16.9)
mRS score	≤3	69 (44.8)
	>3	85 (55.2)
NIHSS score	≤5	82 (53.2)
	>5	72 (46.8)
FOIS level	1–3	45 (29.2)
	4–5	109 (70.8)
Feeding method	Oral feeding	99 (64.3)
	Oral feeding + tube feeding	10 (6.5)
	Tube feeding	45 (29.2)
Caregiver characteristics		
Sex	Male	56 (36.4)
	Female	98 (63.6)
Age (years)	≤50	68 (44.2)
	>50	86 (55.8)
Educational level	≤Junior high school	103 (66.9)
	≥High school	51 (33.1)
Marital status	Married	138 (89.6)
	Other	16 (10.4)
Occupation	Farmer	21 (13.6)
	Self-employed	24 (15.6)
	Public employee	20 (13.0)
	Retired	89 (57.8)
Monthly household income per capita	<1000	19 (12.3)
	1000–3000	48 (31.2)
	3000–5000	45 (29.2)
	>5000	42 (27.3)
Daily caregiving duration	4–8 h	18 (11.7)
	8–12 h	63 (40.9)
	>12 h	73 (47.4)
Relationship with patient	Spouse	95 (61.7)
	Child	37 (24.0)
	Other relatives	22 (14.3)
Living with patient	Yes	108 (70.1)
	No	46 (29.9)
Previous caregiving experience	Yes	47 (30.5)
	No	107 (69.5)
Received dysphagia-related caregiving guidance	Yes	32 (20.8)
	No	122 (79.2)

Note. mRS, modified Rankin Scale; NIHSS, National Institutes of Health Stroke Scale; FOIS, Functional Oral Intake Scale. FOIS levels 6–7 were not included because the inclusion criterion for functional oral intake was FOIS ≤5.

Among caregivers, 98 (63.6%) were female and 86 (55.8%) were aged >50 years. Most caregivers were spouses of the patients (61.7%) and lived with the patients (70.1%). Only 32 caregivers (20.8%) had received dysphagia-related caregiving guidance. Detailed participant characteristics are presented in Table 1.

3.2 Caregiver Preparedness Among Family Caregivers of Patients with First-Ever Post-Stroke Dysphagia

The mean CPS score was 15.69±3.81, corresponding to a mean score rate of 49.03%. The median CPS score was 16.00 (IQR: 13.00–18.75), with scores ranging from 7 to 23. The Shapiro–Wilk test indicated that CPS scores were not normally distributed (W = 0.966, P = 0.001).

The mean item scores ranged from 1.30 to 2.47. The highest-scoring item was “Overall, how well prepared do you think you are to care for your family member?” (2.47 ± 0.88), followed by “How well prepared do you think you are to take care of his/her physical needs?” (2.38 ± 0.75) and “How well prepared do you think you are to take care of his/her emotional needs?” (2.37 ± 0.69). The lowest-scoring item was “How well prepared do you think you are to obtain help and information from the health care system?” (1.30 ± 0.79), followed by “How well prepared do you think you are to cope with the stress of caregiving?” (1.45 ± 0.67). Details are presented in Table 2.

Table 2: Caregiver Preparedness Scores Among Family Caregivers of Patients with First-Ever Post-Stroke Dysphagia (N = 154)

Item	Mean ± SD	Rank
Total CPS score	15.69±3.81	-
Score rate (%)	49.03	-
8. Overall, how well prepared do you think you are to care for your family member?	2.47±0.88	1
1. How well prepared do you think you are to take care of his/her physical needs?	2.38±0.75	2
2. How well prepared do you think you are to take care of his/her emotional needs?	2.37±0.69	3
6. How well prepared do you think you are to handle emergencies that may arise in caregiving?	2.03±0.84	4
5. How well prepared do you think you are to provide care that both you and your family member are satisfied with?	1.90±0.68	5
3. How well prepared do you think you are to identify your family member's needs and arrange appropriate services?	1.81±0.66	6
4. How well prepared do you think you are to cope with the stress of caregiving?	1.45±0.67	7
7. How well prepared do you think you are to obtain help and information from the health care system?	1.30±0.79	8

Note. CPS, Caregiver Preparedness Scale. The total CPS score ranges from 0 to 32, with higher scores indicating greater caregiver preparedness.

3.3 Univariate Analysis of Caregiver Preparedness

Because CPS scores were not normally distributed, non-parametric tests were used for univariate analysis. The results showed that feeding method, caregiver–patient relationship, living with the patient, and receipt of dysphagia-related caregiving guidance were significantly associated with caregiver preparedness (all P < 0.05). No significant differences in caregiver preparedness were

observed according to the patient's educational level or type of medical insurance (both P > 0.05). Only variables with statistical significance or clinical relevance are presented in Table 3.

Table 3: Univariate Analysis of Factors Associated with Caregiver Preparedness (N = 154)

Variable	Test Statistic	P Value
Educational level	Z = -1.48	0.139
Medical insurance	H = 3.39	0.184
Feeding method	H = 70.19	< 0.001
Relationship with patient	H = 6.60	0.037
Living with patient	Z = -2.96	0.003
Received dysphagia-related guidance	Z = -6.78	< 0.001

Note. The Mann–Whitney U test was used for comparisons between two groups, and the Kruskal–Wallis H test was used for comparisons among three or more groups.

3.4 Multiple Linear Regression Analysis of Factors Associated with Caregiver Preparedness

Variables that were statistically significant in the univariate analyses were entered into a multiple linear regression model. The results showed that feeding method and receipt of dysphagia-related caregiving guidance were independently associated with caregiver preparedness. Compared with caregivers of patients receiving oral feeding, caregivers of patients receiving oral feeding plus tube feeding had lower CPS scores (B = -1.262, P = 0.003), and caregivers of patients receiving tube feeding had substantially lower CPS scores (B = -6.745, P < 0.001). Caregivers who had not received dysphagia-related caregiving guidance also had lower CPS scores than those who had received such guidance (B = -4.236, P < 0.001). In contrast, caregiver–patient relationship and living with the patient were not significantly associated with caregiver preparedness after adjustment for other variables. The overall model was statistically significant (F = 53.82, P < 0.001), explaining 68.7% of the variance in caregiver preparedness (R^2= 0.687, adjusted R^2= 0.674). Detailed results are shown in Table 4.

Table 4: Multiple Linear Regression Analysis of Factors Associated with Caregiver Preparedness (N = 154)

Variable	B	SE	t	P value
Oral feeding + tube feeding vs oral feeding	-1.262	0.425	-2.972	0.003
Tube feeding vs oral feeding	-6.745	0.500	-13.485	<0.001
Child vs spouse	0.590	0.470	1.256	0.211
Other relatives vs spouse	-1.167	1.301	-0.897	0.371
Not living with patient vs living with patient	-0.002	0.574	-0.003	0.997
Not receiving dysphagia-related caregiving guidance vs receiving guidance	-4.236	0.537	-7.894	<0.001

Note. Reference categories were oral feeding, spouse, living with the patient, and receiving dysphagia-related caregiving guidance. B, unstandardized regression coefficient; SE, standard error.

3.5 Comparison of Caregiver Preparedness Scores Across Significant Variables

The median CPS scores differed across feeding methods, caregiver–patient relationships, living arrangements, and receipt of dysphagia-related caregiving guidance. Caregivers of patients receiving tube feeding had lower CPS scores than those caring for patients receiving oral feeding or oral feeding plus tube feeding. Caregivers who lived with the patient and those who had received dysphagia-related caregiving guidance showed higher CPS scores. Detailed results are presented in Table 5.

Table 5: Comparison of Caregiver Preparedness Scores Across Significant Variables (N = 154)

Variable	Category	CPS score, median (IQR)
Feeding method	Oral feeding	17.0 (16.0–19.0)
	Oral feeding + tube feeding	16.0 (13.0–18.5)
	Tube feeding	10.0 (9.0–11.0)
Relationship with patient	Spouse	17.0 (15.0–19.0)
	Child	15.0 (11.0–18.0)
	Other relatives	13.0 (11.5–17.0)
Living with patient	Yes	17.0 (14.0–19.0)
	No	12.0 (10.0–17.0)
Received dysphagia-related caregiving guidance	Yes	20.0 (20.0–21.0)
	No	16.0 (12.0–17.0)

Note. CPS, Caregiver Preparedness Scale; IQR, interquartile range.

4. Discussion

4.1 Family Caregivers of Patients with First-Ever Post-Stroke Dysphagia Demonstrated Inadequate Preparedness for Home-Based Dysphagia Management

The present study showed that the mean CPS score was 15.69±3.81, with a score rate of only 49.03%, indicating that family caregivers of patients with first-ever post-stroke dysphagia were generally insufficiently prepared for caregiving responsibilities. This finding is broadly consistent with evidence showing that caregiver preparedness among post-stroke caregivers tends to be low to moderate [8].

Unlike caregivers of patients with stable chronic diseases, caregivers of patients with dysphagia face a unique challenge: they are responsible not only for routine daily care but also for preventing potentially life-threatening events such as aspiration, choking, and aspiration pneumonia. Because PSD is associated with pneumonia, malnutrition, dehydration, poor outcome, and mortality, inadequate caregiver preparedness may have implications for patient safety after discharge [1, 2]. After discharge, many caregivers become the primary decision-makers regarding feeding methods, food consistency modification, feeding posture, and emergency responses during choking episodes. These tasks require specific knowledge and practical skills that are rarely mastered through informal caregiving experience alone.

More importantly, dysphagia management is characterized by a substantial transfer of responsibility from healthcare professionals to family caregivers following hospital discharge. Although swallowing rehabilitation is often initiated during hospitalization, long-term monitoring and implementation of dysphagia-related care largely occur in the home environment. Consequently, caregivers may experience uncertainty regarding whether they are providing safe and effective care, which can negatively affect their preparedness.

From a clinical perspective, inadequate caregiver preparedness should not be viewed merely as a caregiver-related issue. Rather, it may directly influence patient safety and rehabilitation outcomes. Insufficient preparedness may lead to inappropriate feeding practices, poor adherence to swallowing recommendations, delayed

recognition of aspiration signs, and increased risk of dysphagia-related complications. Therefore, improving caregiver preparedness should be considered an essential component of dysphagia management rather than an optional supportive intervention.

4.2 The Greatest Gap in Preparedness Was the Ability to Access Professional Support Rather Than Direct Caregiving Skills

An important finding of this study was that caregivers scored highest on items related to physical care, emotional support, and overall caregiving readiness, whereas the lowest score was observed for obtaining help and information from the healthcare system.

This pattern suggests that family caregivers are generally willing to undertake caregiving responsibilities and may gradually acquire practical caregiving skills through daily experience. Best-practice recommendations emphasize interdisciplinary education for patients, family members, and caregivers on swallowing, aspiration prevention, and feeding recommendations [4]. However, they often lack the ability to navigate healthcare systems and access professional resources when confronted with caregiving difficulties.

Notably, dysphagia is a condition that frequently requires ongoing professional guidance. Patients may experience changes in swallowing function during recovery, requiring timely adjustment of dietary texture, feeding strategies, and rehabilitation exercises. Nevertheless, after discharge, caregivers often face limited access to speech-language therapists, rehabilitation specialists, and dysphagia-trained nurses, particularly in less-developed regions.

The findings therefore highlight a structural gap between hospital-based care and community-based support. Current discharge education often focuses on delivering information before discharge but provides limited mechanisms for continued consultation afterward. Consequently, caregivers may know that assistance is needed but remain uncertain about where or how to obtain it. This interpretation is supported by qualitative evidence showing that family carers of people with post-stroke dysphagia often undertake safe-swallowing support, food and fluid modification, and tube-feeding management in daily life [5].

Given this challenge, future interventions should move beyond conventional discharge teaching and focus on establishing sustainable support pathways. Follow-up clinics, telehealth consultations, online educational platforms, and multidisciplinary dysphagia management programs may be particularly valuable for improving caregivers' access to professional resources and strengthening long-term preparedness.

4.3 Low Preparedness for Stress Management Reflects the Hidden Burden of Dysphagia Caregiving

The second-lowest scoring item involved caregivers' ability to cope with caregiving-related stress, suggesting that psychological preparedness may be even more deficient than practical caregiving preparedness.

The burden associated with dysphagia caregiving is often underestimated. Unlike many other caregiving tasks, dysphagia management requires constant vigilance during every meal because aspiration or choking may occur suddenly and unpredictably. For many caregivers, mealtimes become a source of continuous anxiety rather than routine daily activities. Previous research has suggested that dysphagia-related caregiver burden is multifactorial and may be influenced by swallowing-specific quality of life, dietary restrictiveness, and caregiver-patient dyadic factors [12]. This persistent state of alertness may contribute to emotional exhaustion and reduced confidence in caregiving.

Furthermore, most caregivers in the present study were spouses and older adults themselves. These individuals may simultaneously face age-related health problems, financial pressures, and reduced social support. When caregiving demands accumulate over time, psychological stress may gradually exceed available coping resources, ultimately undermining preparedness and caregiving effectiveness.

These findings suggest that caregiver preparedness should be regarded as a multidimensional construct encompassing not only knowledge and skills but also psychological resilience. Therefore, interventions aimed at improving preparedness should incorporate emotional support, stress-management training, and caregiver counseling rather than focusing exclusively on technical caregiving education.

4.4 Feeding Method and Dysphagia-Related Guidance Were Independent Predictors of Caregiver Preparedness

Among the factors associated with caregiver preparedness, feeding method and receipt of dysphagia-related caregiving guidance appear to have the greatest clinical relevance because both factors are directly linked to healthcare practice.

Caregivers of patients receiving tube feeding reported substantially lower preparedness scores than those caring for patients who received oral feeding. This finding is clinically understandable because tube feeding is often associated with more severe swallowing impairment and greater caregiving complexity. Tube-fed patients require caregivers to master additional skills, including tube maintenance, enteral nutrition administration, aspiration prevention, and recognition of feeding-related complications. Consequently, caregivers may experience greater uncertainty and lower confidence in their caregiving abilities.

More importantly, caregivers who had received dysphagia-related guidance demonstrated significantly higher preparedness levels. This finding suggests that preparedness is not solely determined by caregiver characteristics but may be modifiable through targeted intervention. Given that only 20.8% of caregivers in this study reported receiving professional guidance, there remains substantial room for improvement. Recent evidence from caregiver education research and care knowledge-attitude-practice studies also supports the importance of dysphagia-related education for improving caregiver knowledge and care behaviors [13, 14].

From a clinical perspective, this result carries important implications. While factors such as age or family relationship

are difficult to modify, caregiver education is highly feasible and cost-effective. Standardized dysphagia education programs, practical feeding demonstrations, simulation-based training, and structured discharge planning may all contribute to improved preparedness.

Therefore, future dysphagia management programs should prioritize caregiver training, particularly for caregivers of tube-fed patients and those with limited caregiving experience. Early identification of caregivers at risk of inadequate preparedness and provision of individualized educational support may represent one of the most effective strategies for improving both caregiver competence and patient outcomes.

4.5 Limitations

Several limitations should be acknowledged. First, the cross-sectional design precludes causal inference; therefore, the observed associations should not be interpreted as evidence that feeding method or dysphagia-related guidance directly caused changes in caregiver preparedness. Second, participants were recruited using convenience sampling from two tertiary Grade A hospitals in Baise, which may limit the generalizability of the findings to other regions or healthcare settings. Third, caregiver preparedness was measured using a self-reported scale, and the results may be affected by recall bias or social desirability bias. Fourth, although the regression model included variables significant in univariate analyses, potential confounders such as PSD severity, cognitive status, social support, caregiver health status, NIHSS, mRS, and FOIS level were not fully adjusted. Future longitudinal and interventional studies with larger multicenter samples are needed to further clarify causal pathways and evaluate the effectiveness of structured caregiver-support programs.

5. Conclusion

Family caregivers of patients with first-ever post-stroke dysphagia were insufficiently prepared for their caregiving role, particularly in obtaining healthcare support and coping with caregiving stress. Given the complexity and potential risks associated with dysphagia management, caregiver preparedness should be considered an essential component of post-stroke care. Structured dysphagia-related education, continuous professional support, and targeted interventions for high-risk caregivers may help strengthen preparedness and contribute to safer and more effective home-based care. However, further longitudinal and intervention studies are required to confirm these relationships and determine the most effective caregiver-support strategies.

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