International Journal of Health Sciences
June 2023, Vol. 11, No. 1, pp. 59-68
ISSN: 2372-5060 (Print), 2372-5079 (Online)

Published by American Research Institute for Policy Development
DOI: 10.15640/ijhs.v11n1a7
URL: https://doi.org/10.15640/ijhs.v11n1a7

Continuity of Care Improves Swallowing Function and Reduces Respiratory Complications After Stroke In China: A Systematic Review and Meta-Analysis

Xinglei Wang[1], Yingqiao Wang[2], Weiping Li[3], Juanping Zhong[4], Peifen Ma[5],Yinping Wu[6], Xinman Dou[1,7]

Abstract

Objective To determine the effectiveness of continuous care compared to standard care on Chinese patients with Post-stroke dysphagia.

Methods Cochrane Library, EMBASE, PUBMED, and Web of Science were searched for China studies published in English; the China Biology Medicine (CBM), China Science and Technology Journal Database (VIP), China National Knowledge Infrastructure (CNKI), and Wan fang Database were searched for studies published in Chinese up to January 2023. Data and information were extracted by two reviewers independently and disagreement was resolved by consensus with a third coauthor. Primary outcome was represented by swallowing function, secondary outcomes would be the occurrence of respiratory complications and the quality of life was the third outcomes. The quality of each study included RCT was assessed by the Cochrane risk-of-bias criteria. The GRADE evidence profile was provided to present information about the body of evidence and judgments about the certainty of underlying evidence for each outcome. Meta-analysis of data was performed using RevMan5.3 analysis software.

Results11 RCT studies and 979 patients were finally included.The heterogeneity of the included studies was not significant (I^2=37%, P=0.11) and fixed-effects model yielded was used for combined analysis. Continuity of care improves swallowing function [RR=1.43, 95%CI (1.32, 1.54), P<0.001] and reduces respiratory complications [RR=0.18.95%CI (0.09, 0.38), P<0.001] . Continuity of care can also improves the quality of life [MD=20.23, 95%CI (16.06, 24.39), P<0.001]

Conclusion This meta-analysis provided evidence that continuity of care is effective to improve swallowing function, quality of life, and reduces the risk of respiratory complications. Due to the poor quality of the included literature, additional multicenter studies using larger patient cohorts are required to validate and support these findings. Furthermore, long-term follow-up studies should be performed to measure outcomes, while avoiding bias due to confounding factors such as heterogeneity of the evaluation of dysphagia.

Key words: Continuity of Care; Continuous Nursing Intervention; Stroke; Dysphagia; Deglutition Disorder; Swallowing Disorders; Meta-analysis

1. Introduction

Stroke is regarded as one of the common conditions with higher incidence rates, higher mortality and disability rates estimated to occur at 76 to 119 for every 100,000 population every year.[1] It is currently the second leading cause of death and the first leading cause of disability in the world, the overall lifetime risk of stroke in China is 39.9%, ranking the first in the world.[2]

[1] Department of Nursing, Lanzhou University Second Hospital, Lanzhou, Gansu, PR China
[2] School of Nursing, Lanzhou University, Lanzhou, Gansu, PR China.
[3] School of Nursing, Lanzhou University, Lanzhou, Gansu, PR China.
[4] School of Nursing, Lanzhou University, Lanzhou, Gansu, PR China.
[5] Department of Nursing, Lanzhou University Second Hospital, Lanzhou, Gansu, PR China; School of Nursing, Lanzhou University, Lanzhou, Gansu, PR China.
[6] Department of Neurology, Lanzhou University Second Hospital, Lanzhou, Gansu, PR China.
[7] School of Nursing, Lanzhou University, Lanzhou, Gansu, PR China; Department of Nursing, Lanzhou University Second Hospital, Lanzhou, Gansu, PR China. Electronic address: douxm@lzu.edu.cn, 13909318916

Swallowing disorder is one of the most common complications after stroke, with an incidence of 46%~57%.[3] The occurrence of dysphagia not only affects the safety and effectiveness of patients' eating and causes malnutrition, but also increases the risk of aspiration, pneumonia, and even leads to death by asphyxia. It also leads to patients' pessimism and disappointment, reduces their confidence in recovery, and seriously affects their quality of life.[4] Studies have shown that some post-stroke dysphagia patients may recover swallowing function within a few weeks after treatment, but there are still 11%-50% patients with deglutition disorders after 6 months.[5] However, due to the economic status, the distribution of health resources and the long rehabilitation time, patients cannot take long-term rehabilitation treatment in hospital, and quite a number of post-stroke dysphagia patients need to rely on continuous rehabilitation training on home or community. Continuity care, as a part of the overall care, refers to a new nursing model that extends inpatient care services to the community or family, which can meet the health needs of patients after returning to society and family, including a series of measures such as discharge planning, follow-up, health education and so on.[6] Studies indicate that continuous care applied to patients with swallowing disorders can promote the recovery of swallowing function, improve the quality of life, and reduce related complications.[7-9]The objective of this review was to determine the effectiveness of continuous care on Chinese patients with post-stroke dysphagia.

2. Methods

2.1 Search strategy

Cochrane Library, Excerpta Medical Database (EMBASE), PUBMED, and Web of Science were searched for studies published in English; the China Biology Medicine (CBM), China Science and Technology Journal Database (VIP), China National Knowledge Infrastructure (CNKI), and Wan fang Database were searched for studies published in Chinese from the inception to January 2023. We included randomized controlled trials (RCT) or quasi-RCT testing continuity care and post-stroke dysphagia. The following search terms will be combined using Boolean logic (AND, OR, or NOT) to identify relevant studies: “RCT”, “randomized controlled trial”, “randomized controlled trial”, “stroke*”, “continuous care”, “Dysphagia”, “Deglutition Disorder”, and “Swallowing Disorders”. English retrieval strategies, taking PubMed as an example, as shown in Figure 1.

#1 "Stroke"[Mesh]

#2 Strokes OR Cerebrovascular Accident OR Cerebrovascular Accidents OR CVA OR CVAs OR Cerebrovascular Apoplexy OR Vascular OR Brain Vascular Accident OR Cerebrovascular Stroke OR Cerebrovascular Strokes OR Apoplexy OR Cerebral Stroke OR Cerebral Strokes

#3 "Deglutition Disorder"[Mesh]

#4 Swallowing Disorders OR Swallowing Disorder OR Dysphagia OR Oropharyngeal Dysphagia OR Esophageal Dysphagia

#5 "Transitional Care"[Mesh]

#6 Transition Cares OR Home Transition OR Home Transitions OR Care Continuity OR Continuum of Care OR Care Continuum OR Continuity of Care OR Continuous care OR continuous nursing

#7 #1 OR #2

#8 #3 OR #4

#9 #5 OR #6

#10 #7 AND #8 AND #9

Figure 1 PubMed search strategy.

2.2 Eligibility criteria for included studies

2.2.1 Types of Research

Randomized controlled trials of continuity of care for patients with dysphagia after stroke in China (including Hong Kong, Macao, and Taiwan), the article was published in Chinese or English, whether blind method was used or not.

2.2.2 Types of participants Inclusion and exclusion criteria

Inclusion criteria : age ≥18 years old, diagnosed with stroke by the Fourth National Conference on Cerebrovascular Diseases of the Chinese Medical Association in 1996 or established by the WHO in 1978, diagnosed by CT or MRI; deglutition function evaluation, the deglutition function evaluation ≥ grade 3 after drinking water test in depression field, and/or patients with consciousness disturbance; Exclusion criteria: patients complicated with serious heart, liver and kidney diseases, endocrine and metabolic diseases, tumors, severe malnutrition and severe stroke were excluded.

2.2.3 Types of studies

We will administer continuous nursing intervention for patients in the experimental group and conventional nursing intervention or no nursing intervention for patients in the comparisons group.

2.2.4 Types of outcomes

Swallowing function index: water swallow test, divided into five levels; Grade 1: Swallow smoothly once; Grade 2: Swallow twice or more; Grade 3: Swallow once, but cough; Grade 4: Swallow more than twice, but cough; Grade 5: Coughs heavily when drinking water and cannot swallow completely. If the swallowing function of the patient is improved by 2 grades, it is effective, and if the swallowing function is increased by 1 grade, it is invalid; Complications of dysphagia: including aspiration, choking and aspiration pneumonia; Activity of daily living index: the Barthel Index (BI), with a total score of 100 points.

2.3 Search methods for identification of studies

2.3.1 Literature exclusion criteria

Discussions, meetings, editorials, reviews, case reports, letters, commentaries, critiques and detailed data cannot be extracted were excluded. The outcome index does not contain any of the above were excluded. No comparative literature and the design scheme is not scientific, poor quality literature were also excluded.

2.3.2 Literature screening and data extraction

Two researchers independently screened literature, extracted data and cross-checked according to inclusion and exclusion criteria. In case of disagreement, the third researcher was consulted to make a decision. The extracted literature data included: first author name, publication year, sample size, intervention measures, outcome indicators and evaluation tools, outcome indicators measurement time, and outcome measurement data.

2.3.3 Literature quality evaluation

Two researchers used Cochrane bias risk assessment tool to independently evaluate the included literatures. The main contents included: random assignment scheme; distribution scheme hiding; blind method; result data integrity; selective reporting of research results; and other sources of bias. Evaluators are required to make a "yes" (low risk of bias), "no" (high risk of bias), or "unclear" (lack of relevant information or uncertain bias) judgment on each content. If there is any disagreement in the quality evaluation, it can be discussed or solved with the assistance of a third researcher.

2.3.4 Statistical Analysis

We used RevMan software (Review Manager, version 5.4) and Stata16.0 for data analysis. The X^2 test and I^2 value were used for the heterogeneity among the included results. If $P \geq 0.1$ and $I^2 < 50\%$, the heterogeneity between the studies was acceptable. The fixed-effect model was used for meta-analysis. If $P < 0.1$ and $I^2 \geq 50\%$, the heterogeneity between the studies was large. The random effects model was used for meta-analysis, and subgroup analysis, sensitivity analysis, meta regression analysis and other methods were used to analyze the sources of heterogeneity. When there was obvious heterogeneity between studies, but the source of heterogeneity could not be determined, only descriptive analysis was performed. The following measures of treatment effect were used: risk ratio (RR) and 95% confidence intervals (CI) for the analysis of dichotomous outcomes, mean and standard mean differences, 95%CI for continuous outcomes, and $P < 0.05$ was considered statistically significant. As planned, publication bias will be evaluated using funnel plot asymmetry testing if a sufficient number of studies are identified ($n>10$).The level of meta-analysis was $\alpha=0.05$.

3 Results

3.1 Literature screening process and results

Initially 200 literatures were retrieved, of which 145 were in Chinese and 55 were published in English. A total of 117 literatures were obtained after excluding 11 literatures of review, meta-analysis and systematic review. After reading the title and abstract, 24 literatures needed to obtain the full text. After reading the full text, literatures with outcome indexes that did not meet the inclusion criteria and incomplete information were deleted, 11 RCTs and 979 patients were finally included. 10 RCTs reported water swallow test, 6 studies reported complications of dysphagia, and 3 studies reported other outcomes. The literature screening process and results are shown in Figure 2. The basic characteristics of included studies are shown in Figure 3, and the methodological quality of the included studies was shown in Figure 4.

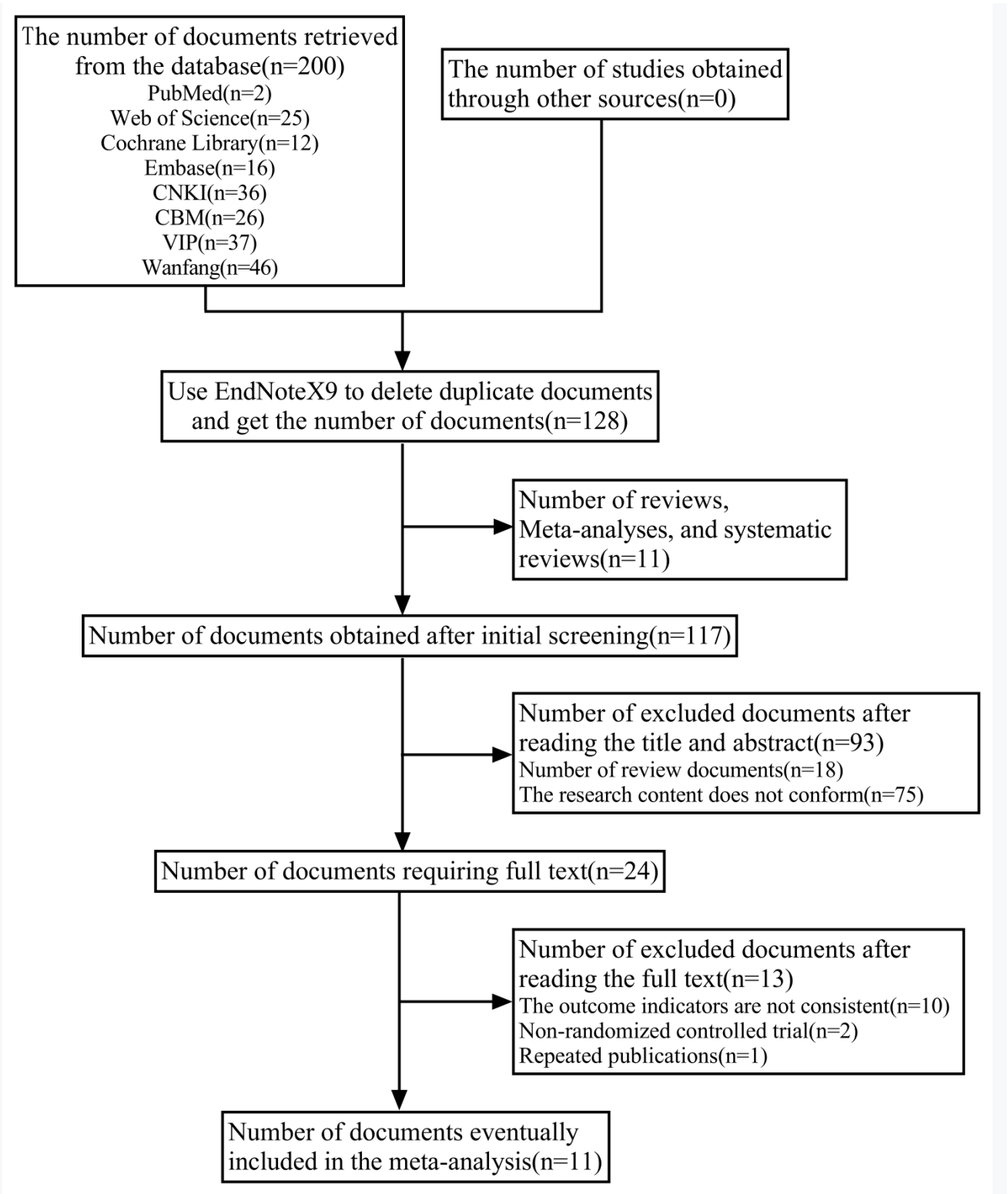

Figure 2 Flowchart of literature search and screening process.

Articles	Sample Size	Gender (male/female)	Average age (years）	Interventions		Intervention time	Measurement index
				T	C		
Xiaoxu AN 2021	T:40 C:40	51/29	59.2±4.8	Continuous care	Routine care	3months	①③
Hui Chen 2017	T:35 C:35	T:19/16 C:20/15	T:55.8±10.8 C:56.2±11.5	Continuous care	Routine care	3months	①②
Jiying Cheng 2016	T:48 C:48	T:32/16 C:30/18	T:59.7±12.4 C:61.8±13.1	Continuous care	Routine care	6months	①②
Yuan Guo 2019	T:43 C:43	T:23/20 C:22/21	T:64.3±10.1 C:64.2±10.2	Continuous care	Routine care	2months	①②
Junping Hong 2014	T:33 C:32	T:18/15 C:18/14	T:67.0±9.3 C:67.3±9.1	Continuous care	Routine care	6months	①②
Yujuan Huang 2015	T:28 C:28	T:18/10 C:16/12	T:65.7 ± 10.5 C:65 ± 11.2	Continuous care	Routine care	3months	①
Jie Zhang 2019	T:60 C:60	T:35/25 C:36/24	T:63.4±8.2 C:64.1±7.4	Continuous care	Routine care	6months	①
Juan Zhou 2018	T:45 C:45	T:25/20 C:23/22	T:63.7±1.9 C:64.2±2.3	Continuous care	Routine care	/	①②
Qiaoling Li 2019	T:39 C:39	T:23/16 C:24/15	/	Continuous care	Routine care	3months	①③
Zhen Huang 2018	T:70 C:70	T:46/24 C:49/21	T:62.1±5.2 C:59.2±4.8	Continuous care	Routine care	3months	①③
Jing Li 2021	T:49 C:49	T:25/24 C:23/26	T:68.3±4.7 C:67.3±3.6	Continuous care	Routine care	3months	①②

Note: ①Water Swallow Test; ② Complications of dysphagia; ③ Basel Index (BI).

Figure 3 Characteristics of included trials.

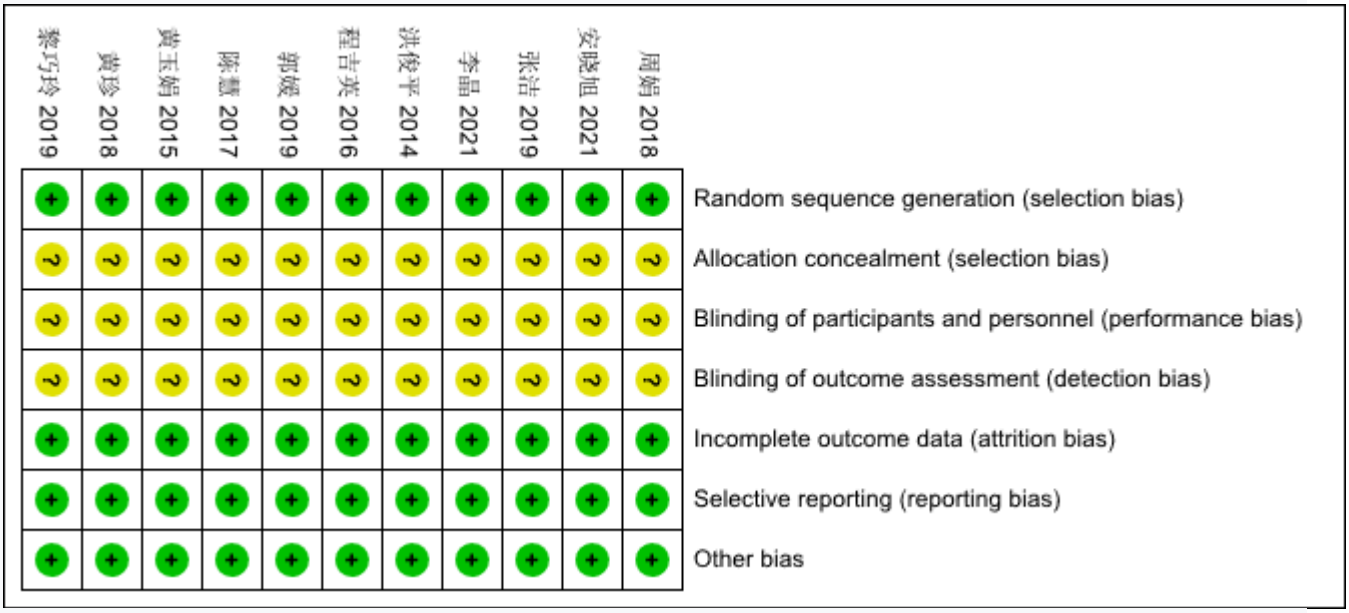

Figure 4 Risk of biases assessment of included studies.

3.2 Results of meta-analysis

3.2.1 Water Swallow Test

A total of 901 patients from 10 studies were included.[8-17]The heterogeneity of the included studies was not significant (I^2=37%, P=0.11). A combined analysis using a fixed-effects model yielded [RR=1.43, 95%CI(1.32,1.54), P<0.001], indicating a statistically significant difference in the effective rate of swallowing function changes between the two groups, as shown in figure 5 .

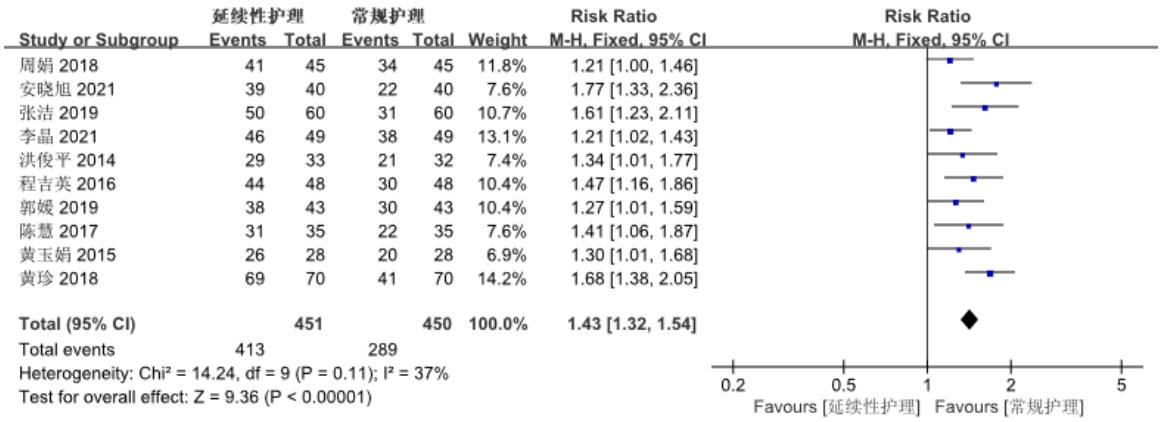

Figure 5 Continuous care versus standard care: swallowing function.

3.2.2 Complications of Dysphagia

6 studieswith a total of 505 patients were included.[8, 10, 12, 14, 15, 17]The included studies were heterogeneous (I2=63%,P=0.02) and were pooled using a random-effects model [RR=0.10, 95%CI(0.03,0.28), P<0.001], indicating a statistically significant difference in the effective rate of changes in swallowing function between the two groups, as shown in Figure 6. The heterogeneity was found to be insignificant (I^2=4%, P=0.38) and, after the articles by Jiying Cheng,[12]were excluded. The fixed effects model was used to analyze the heterogeneity [RR=0.18, 95%CI (0.09, 0.38), P<0.001], indicating that there is a significant difference in the effective rate of complications of dysphagia change between the two groups.

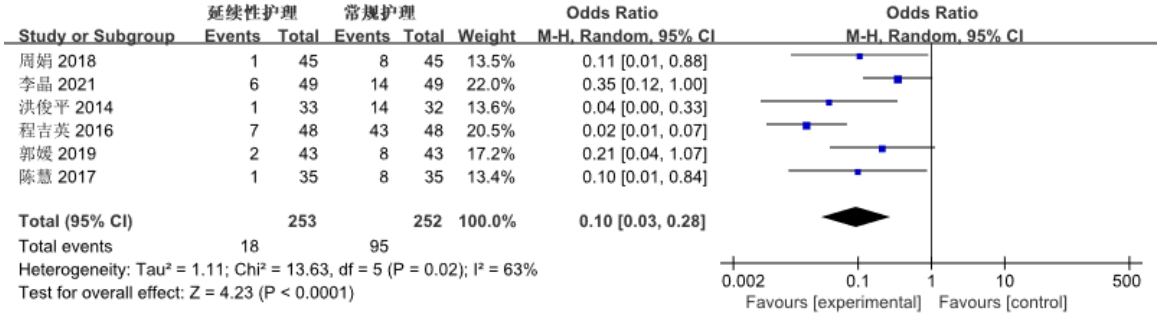

Figure 6 Continuous care versus standard care: complications of dysphagia.

3.2.3 The Barthel Index (BI) scores

A total of 298 patients from 3 studieswere included.[13, 16, 18] The included studies had heterogeneity (I2=79%, P=0.008) and were pooled using a random-effects model [MD=16.21, 95%CI (8.35, 24.07), P<0.001], indicating a statistically significant difference in BI scores between the two groups, as shown in figure 7. After removing QiaolingLi[18]and other articles, the heterogeneity was not significant (I^2=0%, P=0.99) , so the fixed effects model was used to analyze the data[MD=20.23, 95%CI(16.06,24.39), P<0.001] , indicating a statistically significant difference in BI scores between the two groups.

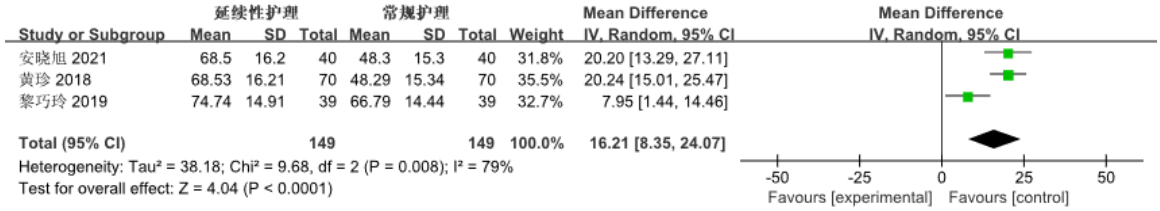

Figure 7 Continuous care versus standard care: BI score.

4. Discussion

"The National Nursing Career Development Plan (2016-2020)" points out continuity nursing as the key content of the "13th Five-Year Plan". Continuous care service system should extend professional services to the community and family, improve the "medical institutions as the support, home rehabilitation as the basis, and community resources as the support".[19] Due to the shortage of domestic medical resources and huge medical demand, the impact of economic pressure and the slow development of community health care, stroke patients often choose to return to their families after undergoing acute treatment.

However, discharge does not mean the end of treatment, and the diet, life and rehabilitation of patients after discharge will mainly depend on their families. Effective and continuous nursing intervention can help patients and their families get timely rehabilitation guidance, and promote the rehabilitation rate of disease up to 50%, continuity of care services has been paid more and more attention.[20, 21]

4.1 Influence of continuous care on swallowing disorders after stroke

Dysphagia is very common after stroke, affecting patients' food safety and quality of life. The results of meta-analysis in this study showed that compared with the control group, although the intervention follow-up time and intervening measures were different in the included literature, the extended care group could improve the recovery of swallowing function in stroke patients with swallowing disorders, which was consistent with the results of several domestic studies.[6,10] Liu Ling yun[20] pointed out that we should pay attention to the swallowing problem of elderly patients. Accurate evaluation and standardized intervention is very important for them. Effective health education,and continuous follow-up care after discharge can improve the outcome of patients' rehabilitation and improve the quality of life of the elderly. At present, the continuous nursing service adopted in our country is oriented by specialization, characterized by information, and the linkage between hospital, community and family. However, studies related to continuity of nursing started late in China.The continuation of nursing models are different between provinces, and lack a unified process and system.[22] A perfect and diversified care is still needed for the future research direction of nursing in China.

4.2 **Influence of continuous nursing on pulmonary complications in Post-stroke dysphagia patients.**

Dysphagia is an important risk factor for stroke-related pneumonia. Due to disease factors, patients may have limited lingual muscle and throat muscle activity, and may have difficulty in mastication, leading to the occurrence of stroke-related pneumonia. The occurrence of stroke-associated pneumonia may lead to prolonged hospital stay and even an increased risk of death during hospitalization.[23] Continuous care is conducive to the recovery of swallowing dysfunction in stroke patients and reduce the occurrence of complications.[21, 24] In the meta-analysis of this study, it was also found that, compared with the control group, the incidence of adverse events such as coughing, aspiration and lung infection after discharge was lower in the continuous care group.

4.3 Form and status of continuous care for stroke patients with dysphagia in China.

At present, in most hospitals in China, telephone follow-up combined with home visit is the main method of continuity care for post-stroke dysphagia patients. The 11 literatures included in this study also use this form for continuity care. There are disadvantages in monitoring and guiding patients' rehabilitation exercise and medication through telephone follow-up and other communication methods. Issues such as lack of information, untimely communication, and poor interaction with the patients. Although family visits can provide face-to-face guidance to patients and their families, but these interventions only benefit a small percentage of stroke patients, home visits are not available in rural areas. In recent years, Internet is also widely used in continuous care services. In 2018, The General Office of the State Council issued a statement on promoting the development of an "Internet + Medical and Health" service system. The government proposed to improve the service system to meet the growing medical and health needs of the masses.[25]A number of domestic scholars provide continuity of care services through the network information platforms, such as WeChat, QQ, remote management, mobile APP. The Internet enables timely communication between medical staff and patients and facilitates further discussion among patients. With the help of WeChat public account and group function, complete intervention and guidance for disease treatment can be achieved; errors in rehabilitation training of patients can be corrected; and the therapeutic effect can ultimately be improved. [17, 26-30] However, there is still no perfect continuity nursing management network system for dysphagia and for other elderly care issues. It is difficult to achieve timely coordination, connection, consistency between discharged patients and medical staff.In the future, it is necessary to establish a continuous follow-up nursing management network system and standardize follow-up policies and procedures from admission to discharge. Nurses should regularly observe patients' swallowing and eating conditions online, and provide accurate and timely targeted guidance. [27]

Limitations of this study

As a result ofthe different medical models at local, national and international levels, this study is only considered the impact of continuous care on dysphagia after stroke in China. The included literatures were all in Chinese, and most of the studies did not mention the method of randomization, intervention and evaluators' blindness, which may lead to some measurement bias. All the included studies showed positive results, which may have a certain publication bias. The sample size of some included studies was small and the quality was low.

Disadvantages and Suggestions

At present, there is a lack of multidisciplinary cooperation and standard mode of continuity of nursing interventions, leading to inconsistent ways of intervention, and poor intervention effects. The future research direction is to establish a mature and continuous nursing model and standard system and process with the cooperation of doctors, dietitians, rehabilitation therapists, responsible nurses and other disciplines. Patients with dysphagia after stroke have a great demand for disease-related knowledge, life care and rehabilitation guidance, specific implementation plans and assessment standards should be formulated according to the specific needs of patients. The Internet based continuity of care is an important and innovative intervention, but there is still not a perfect management network system for patients with stroke related swallowing disorders. As well, the coordination system between hospital and community and family needs further study.

Conclusion

This meta-analysis provided evidence that continuity of care is effective to improve swallowing function, quality of life, and reduces the risk of respiratory complications of post-stroke patients. However, the quality of related studies included in this study is low. Therefore, it is necessary to further strengthen the design of the original study, formulate specific continuity of care programs and evaluation criteria, in order to provide more reliable evidence-based knowledge.

Footnotes

This work was supported financially by grants from Health Industry Research Program of Gansu Province, Project name: Analysis of Factors related to fall risk of stroke patients and construction of prediction model, (nos. GSWSHL2021-011), Key research and development project of Gansu Province Science and Technology Plan (no. 20YF8FA077)
The authors have no conflicts of interests to disclose
.

References

[1] Thrift A G, Thayabaranathan T, Howard G, et al. Global stroke statistics[J]. Int J Stroke, 2017,12(1):13-32. https://pubmed.ncbi.nlm.nih.gov/27794138/
[2] Global, regional, and national burden of neurological disorders, 1990-2016:a systematic analysis for the Global Burden of Disease Study 2016[J]. Lancet Neurol, 2019, 18(5):459-480. https://pubmed.ncbi.nlm.nih.gov/30879893/
[3] Li Chao, Zhang Mengqing, Dou Zulin, et al. Chinese Journal of Physical Medicine and Rehabilitation,2017, 33 (12) : 6, 937-943. DOI: 10.3760/cma.j.issn.0254-1424.2017.12.014
[4] Zhu Jing, Yu Haizhen, Huang Yurong,et al. Evidence-based nursing and practical effect evaluation of senile stroke patients with dysphagia [J]. Contemporary Nurses (mid-day), 2018,25(10):39-41. https://kns.cnki.net/kcms2/article/abstract?v=3uoqIhG8C44YLTlOAiTRKibYlV5Vjs7i0kJR0HYBJ80QN9L51zrP9oPr-h7ugMFf1WJUCy6D8urGOf3zeOw9QSLuc8b8g&uniplatform=NZKPT
[5] Arnold M, Liesirova K, Broeg-Morvay A, et al. Dysphagia in Acute Stroke: Incidence, Burden and Impact on Clinical Outcome[J]. PLoS One, 2016,11(2):e148424.https://pubmed.ncbi.nlm.nih.gov/26863627/
[6] Huang Yan. Effect of continuous nursing on recovery of swallowing function and occurrence of aspiration pneumonia in patients with dysphagia after stroke [J].Health Care Guide, 2021(2):173. https://s.wanfangdata.com.cn/advanced-search/paper
[7] Zhang Hong, Sun Rongfeng. Effect of comprehensive continuous nursing on dysphagia in stroke patients [J]. Contemporary Clinical Medicine, 2016,29(5):2496-2497. https://kns.cnki.net/kcms2/article/abstract?v=3uoqIhG8C44YLTlOAiTRKibYlV5Vjs7ijP0rjQD-AVm8oHBO0FTadg_KkWh44IsfNLKIkiANpz7ze3d0jVJHSqR0DK2Q6lEY&uniplatform=NZKPT
[8] Chen Hui, Ma Changmei, Liu Sha. Effect of continuous home care on quality of life of stroke patients with dysphagia dysfunction [J].Nursing Practice and Research, 2017,14(17):59-60. https://kns.cnki.net/kcms2/article/abstract?v=3uoqIhG8C44YLTlOAiTRKibYlV5Vjs7iAEhECQAQ9aTiC5BjCgn0RrFRx4qQxM7WQPZyLKIcuohxU18_gQ0nhFsk0LsGyV_N&uniplatform=NZKPT
[9] Zhang Jie. Effect of continuous rehabilitation nursing on improving dysphagia and limb movement disorders in patients with cerebral infarction [J].Journal of Clinical Medicine Literature Electronic, 2019,6(06):101-103.https://kns.cnki.net/kcms2/article/abstract?v=3uoqIhG8C44YLTlOAiTRKibYlV5Vjs7iLik5jEcCI09uHa3oBxtWoMw3xf_WSyC2hlQyYmPjhY6MFD3632yHfJ7XNPJ1b6ZO&uniplatform=NZKPT
[10] Hong Junping, Ma Qinghua, Cui Junye, et al. Impact of continuous nursing on rehabilitation of community patients with dysphagia after stroke [J]. Contemporary Nurses (next day), 2014(12):105-107.

https://kns.cnki.net/kcms2/article/abstract?v=3uoqIhG8C44YLTlOAiTRKibYlV5Vjs7ir5D84hng_y4D11vwp0rrtVYTKlIdolV0Bw9BFbeSbH0NVW_jogR1vIemxNBR1LEZ&uniplatform=NZKPT

[11] Huang Yujuan, Zhu Peiyu. Application of continuous nursing intervention in dysphagia during convalescence of stroke [J]. Tianjin Nursing, 2015,23(06):499-500.

[12] Cheng Jiying. Effect of extended nursing on dysphagia of stroke patients at home [J]. Chinese and Foreign Medical Care, 2016,35(22):168-171.
https://kns.cnki.net/kcms2/article/abstract?v=3uoqIhG8C44YLTlOAiTRKibYlV5Vjs7ijP0rjQD-AVm8oHBO0FTadua_BJqWHc2TNT0VF8R1upptHclDEQRu9dVOCaa9t0v6&uniplatform=NZKPT

[13] Huang Zhen, Huang Minhua. Clinical study of continuous rehabilitation nursing for improving dysphagia and limb movement disorders in patients with cerebral infarction [J].Journal of General Nursing, 2018,16(25):3187-3188.
https://kns.cnki.net/kcms2/article/abstract?v=3uoqIhG8C44YLTlOAiTRKibYlV5Vjs7i0kJR0HYBJ80QN9L51zrP3j9F3oKhbQfzlLwtAj9WTB0hejySvc_TkJ6d2wMa1qO&uniplatform=NZKPT

[14] Zhou Juan, LvXiaoyan. Effect of continuous nursing intervention on rehabilitation of stroke patients with dysphagia [J].Chinese Journal of Practical Medicine, 2018,13(31):147-148.
https://kns.cnki.net/kcms2/article/abstract?v=3uoqIhG8C44YLTlOAiTRKibYlV5Vjs7i0-kJR0HYBJ80QN9L51zrP7gV5XyGdLBWu4honDTdF6d3Jt-c_aKAMOip41Xm33Qe&uniplatform=NZKPT

[15] Tang Duoxiang, Guo Yuan. Effects of continuous nursing intervention on the recovery of swallowing function in stroke patients with dysphagia [J]. Clinical Medical Engineering, 2019, Vol. 26 (No. 4):535-536.
https://kns.cnki.net/kcms2/article/abstract?v=3uoqIhG8C44YLTlOAiTRKibYlV5Vjs7iLik5jEcCI09uHa3oBxtWoK-AxPakPMHjosh5M3lak5uFygurK2FM2v-qFgvuSxvs&uniplatform=NZKPT

[16] AnXiaoxu. Effects of continuous nursing on dysphagia and limb movement disorders in patients with cerebral infarction [J]. Journal of Hebei North University (Natural Science Edition),201,37(12):31-32.
https://kns.cnki.net/kcms2/article/abstract?v=3uoqIhG8C44YLTlOAiTRKibYlV5Vjs7iy_Rpms2pqwbFRRUtoUImHQfJdPsv_1f7rzhkrlMCXAY5hR6k7QQdEW7b0trut-SE&uniplatform=NZKPT

[17] Li Jing, Zhang Wenjuan, Liu Jingjing. Application value of wechat platform in continuous care of dysphagia after stroke [J].Medical Diet and Health, 201,19(19):192-193.
https://kns.cnki.net/kcms2/article/abstract?v=3uoqIhG8C44YLTlOAiTRKibYlV5Vjs7iAEhECQAQ9aTiC5BjCgn0Ru7WAYOzJrKItPYeXllOj28y69XtqscWeGWYd9_AlWQ1&uniplatform=NZKPT

[18] Li Qiaoling, Huang Chaojun, Hu Xiaohong, et al. Nursing model and effect evaluation of dysphagia patients with stroke at home [J]. Chinese Journal of Rehabilitation, 2019,34(06):291-294.
https://kns.cnki.net/kns8/defaultresult/index

[19] Interpretation of the National Nursing Development Plan (2016-2020) [J].Nursing Research, 2016,30(36):4608.
https://kns.cnki.net/kcms2/article/abstract?v=3uoqIhG8C44YLTlOAiTRKibYlV5Vjs7iAEhECQAQ9aTiC5BjCgn0RujzqL5yHoYC8It43_Rjs73UPJTEF5LxulociItuvaYC&uniplatform=NZKPT

[20] Liu Lingyun. Study on the effect of continuous nursing on the rehabilitation of cerebral infarction patients with swallowing disorder [D]. Yanbian University Nursing, 2020.
https://kns.cnki.net/kcms2/article/abstract?v=3uoqIhG8C475KOm_zrgu4lQARvep2SAkyRJRH-nhEQBuKg4okgcHYuHZQKUcV3RIgfQoOYE_qz8HqffkbeAjscHy6alP1HCH&uniplatform=NZKPT

[21] Liu Yuanyan. Research progress of continuous nursing in patients with cerebral infarction complicated with dysphagia [J]. Modern Medicine & Hygiene, 201,37(11):1875-1878.
https://kns.cnki.net/kcms2/article/abstract?v=3uoqIhG8C44YLTlOAiTRKibYlV5Vjs7iy_Rpms2pqwbFRRUtoUImHQcmWIEaxGrrOdnNk9_FykJs2ODuBwl7Pw0upwA1Bgfw&uniplatform=NZKPT

[22] Yang Jie, XieXiaohua. Research progress of continuous care for patients with dysphagia after stroke [J]. Chinese Medical Review, 201,18(16):61-64.
https://kns.cnki.net/kcms2/article/abstract?v=3uoqIhG8C44YLTlOAiTRKibYlV5Vjs7iy_Rpms2pqwbFRRUtoUImHYytj07rcMRP-95w9oIjiLonuWXr0y5HSEBT7TH-9Yl7&uniplatform=NZKPT

[23] Liu Xian, Zhao Zhifang. Visual analysis of hot research spots of dysphagia in cerebral apoplexy based on Web of Science [J].Journal of Advanced Nursing, 202,37(06):509-515.
https://kns.cnki.net/kcms2/article/abstract?v=3uoqIhG8C44YLTlOAiTRKibYlV5Vjs7iJTKGjg9uTdeTsOI_ra5_XXjKiBdPqbh8YDu3PuS7b0WO-IRpVB9ysobzfhQFVLoI&uniplatform=NZKPT

[24] Jiang Zhenzhen, XuHongmei, Wang Meilin, et al. Meta-analysis of the effect of hospital-oriented extended care on the rehabilitation of stroke [J].Chinese Journal of Clinical Neurosurgery, 2018,23(5):368-371.
https://kns.cnki.net/kcms2/article/abstract?v=3uoqIhG8C44YLTlOAiTRKibYlV5Vjs7i0kJR0HYBJ80QN9L51zrP8coUVIFY6SEnn6kDP0NL0rCjt6wOtiPNEM0kZBlqaK&uniplatform=NZKPT

[25] Opinions of The General Office of the State Council on promoting the development of "Internet plus Medical and health care" [J].Bulletin of The State Council of the People's Republic of China, 2018(14):9-13. https://kns.cnki.net/kcms2/article/abstract?v=3uoqIhG8C45NY4jwqkvvrzof7jMQmTJpq_bBMLELa412kbPqQt_uDnzUQ7KKnyt0go1_jmUVVbmBABaDm2FgZzTA01M0AD88&uniplatform=NZKPT

[26] Li Lin. Application of wechat platform in continuous care of dysphagia after stroke [J]. Heilongjiang Medical Journal, 2016,29(06):1259-1261.https://kns.cnki.net/kns8/defaultresult/index

[27] Wang Ling, Wang Yun, XuChunping. Study on continuous nursing intervention of elderly patients with dysphagia by cloud follow-up system [J].World Latest Medical Information Abstracts (Continuous Electronic Journal), 2019,19(63):362-363, 365 https://kns.cnki.net/kns8/defaultresult/index

[28] Jiang Chongfeng, Ying Hai-Li, Yang Yun, et al. Effect of wechat intervention on continuous nursing care of discharge patients with dysphagia disorder with nasal feeding tube [J].Contemporary Nurses (last issue), 20,27(7):38-40.https://kns.cnki.net/kns8/defaultresult/index

[29] Shi Hongping. Application value of wechat platform in continuous care of dysphagia after stroke [J].Health Care Guide, 2020(5):217.https://s.wanfangdata.com.cn/

[30] ZengLingdan, Yin Xue, He Guiquan, et al. Application of information continuous care based on dysphagia Index questionnaire in patients with dysphagia in neurology Department [J].Chinese Journal of Rehabilitation, 201,36(07):418-422. https://kns.cnki.net/kcms2/article/abstract?v=3uoqIhG8C44YLTlOAiTRKibYlV5Vjs7iy_Rpms2pqwbFRRUtoUImHRkj4xNf4b_xf-Lqy83UHmSl9jt21s-iov--XHC9bxVp&uniplatform=NZKPT