

Research on the Construction and Application of the Quality Control System for Stroke Patients based on Indicators

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Abstract

This paper draws on the requirements of CSCA quality control indicators and constructs 11 sensitive indicators of the quality of care for stroke patients. According to the nursing sensitivity index data reported by nurses, a report on the quality of care for stroke patients was compiled. Relying on the CSCA data management cloud platform, a stroke patient care quality control system was built, and data on the sensitivity index of stroke patient care quality was collected nationwide. After establishing the nursing quality control system for stroke patients, we can understand the implementation of standardized nursing for stroke patients through the analysis of the reported data. On the other hand, through the monitoring and feedback of the reported data, real-time monitoring, rapid feedback, and timely optimization of clinical nursing work for stroke patients are realized, helping, guiding, and supervising clinical nursing work and promoting continuous improvement of the quality of care for stroke patients.

Keywords: *Stroke, Nursing quality, Nursing management*

1. Introduction

Stroke is a cerebrovascular disease with acute onset. Stroke is the first cause of death and disability in adults. It has the characteristics of high morbidity, high disability, high mortality, high recurrence rate, and high economic burden [1]. During the hospitalization of stroke patients, the stroke care provided by the hospital has an essential impact on the patient's outcome and hospitalization outcome. How to scientifically and reasonably measure and evaluate the nursing care of stroke patients is one of the contents of nursing management [2]. Constructing a nursing quality sensitivity index can quantitatively measure and evaluate nursing quality, and it is an essential means for assessing clinical nursing quality and carrying out nursing quality management [3][4][5][6]. The scientificity and sensitivity of the nursing quality sensitivity index are directly related to the efficiency and effect of management [7][8]. Currently, there is no scientific, systematic, and unified sensitivity index for the quality of care for stroke patients [9]. The collection, evaluation, and feedback of sensitive indicators of the quality of care for stroke patients need a systematic and standardized program. As a result, the quality management of stroke patients needs long-term and standardized supervision. Therefore, it is essential to establish a systematic and scientific care quality control system for stroke patients based on constructing sensitive indicators of the quality of care for stroke patients and learning from advanced management methods. To improve the quality of care for

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stroke patients, formulate a nursing quality management mechanism that matches medical care and realizes real-time monitoring, rapid feedback, and timely optimization of clinical care for stroke patients. This study draws on the National Database of Nursing Quality Indicators (NDNQI) sensitivity index development process [10], using the literature method and expert meeting method to formulate the stroke patient care quality sensitivity index and relying on the CSCA data management cloud platform to build a stroke patient care quality control system.

2. Research methods

2.1. Form a research team

The research team is composed of 10 members, including a director of the Nursing Branch of the Stroke Society and a deputy director of the nursing department, responsible for coordinating research projects and controlling the research progress. One secretary of the Nursing Branch of the Stroke Society is mainly responsible for formulating the case report form for the quality of stroke care. A head nurse in the Department of Neurology is accountable for the guidance of stroke professional issues. Two head nurses in the neurology ward are responsible for contacting experts and sorting out the opinions collected at the expert meeting. Three nursing backbones with master's degrees are accountable for literature retrieval, quality evaluation, data sorting, and analysis. One information engineer is responsible for the maintenance of the data management platform.

2.2. Research status and quality evaluation

The computer searches the PubMed, CINAHL, Embase, and Wan Fang databases and traces the references included in the study in a "snowball" way. The search time limit is from establishing the database to October 31, 2018. The search term uses a combination of subject terms and free words. The English search terms are "stroke/cerebral apoplexy, cerebral ischemia, brain hemorrhage, cerebral infarction/brain infarction" and "nursing quality/quality indicator/nursing-sensitive quality indicators." Refer to the stroke guidelines website, the indicators reported by the National Center for Nursing Quality Control, the Agency for Healthcare Research and Quality (AHRQ) quality indicators, and the nursing in the National Quality Forum (NQF) Related quality indicators.

Inclusion criteria: The subjects of the study were stroke patients aged ≥ 18 years; the quality of care for stroke patients was involved. The content of the study illustrates the calculation method of the quality of care for stroke patients. The research outcome indicators reflect the quality of care for stroke patients. Exclusion criteria: duplicate published literature; related data is incomplete, or data cannot be used. The research design is flawed, the statistical methods are incorrect, and the full text cannot be obtained.

Two researchers all independently completed a literature search, screening, and quality evaluation. When there is any doubt or disagreement, the decision is made after discussion, or the third party is consulted [11]. This study uses the American Hopkins level of evidence and quality evaluation method [12][13] to evaluate the quality of relevant literature. A total of 19 085 articles were obtained by searching the database, including 18 431 Chinese and 654 English articles. Through literature screening and quality evaluation, 38 related literature were finally included, and 83 stroke patients' care quality evaluation indicators were obtained.

2.3. Expert research

The stroke patient care sensitivity index constructed in this study is embedded in the CSCA data management cloud platform with a stroke patient care quality module. And collect data on the sensitivity index of the quality of care for stroke patients nationwide. Therefore, the construction of sensitive indicators of nursing quality in this study needs to meet the requirements of CSCA quality control. The index inclusion criteria are the nursing evaluation-related indexes of stroke patients, the nursing operation-related indexes of stroke patients, and the nursing indexes of stroke-related complications. Exclusion criteria include structural indicators such as bed-to-care ratio and nurse composition ratio. According to the above inclusion and exclusion criteria, the team members screened 26 sensitivity indexes (20 process indexes, six outcome indexes) of the quality of care for stroke patients out of 83 nursing sensitivity indexes. They are fall/fall evaluation rate, stress injury evaluation rate, the ability of daily living evaluation rate, pain evaluation rate, 24h ECG monitoring rate in patients with acute ischemic stroke, restraint usage rate, aspiration/asphyxia evaluation rate, incontinence Evaluation rate of dermatitis, prevention rate of deep vein thrombosis, rate of fever treatment, rate of good limb placement, rate of early activity, rate of nutrition evaluation, rate of bedside elevation, rate of depression screening, rate of implementation of health education, implementation of continuous care 20 process indicators: rate, blood pressure monitoring rate, National Institute of Stroke Scale (NIHSS) evaluation rate, and swallowing function evaluation rate. There are six outcome indicators: the incidence of pneumonia, the incidence of foot drop, the incidence of pressure injury, the incidence of tubal slippage, the incidence of constipation, and the incidence of catheter-related urinary tract infection.

Table 1. Expert information

Expert	Age (years)	Job title	Position	Education	Working years	Research direction
1	43	Chief Nurse	Director of Nursing	Undergraduate	25	Critical Care, Neurology Nursing, Nursing Management
2	53	Chief Nurse	Deputy Director of Nursing	Undergraduate	32	Neurology nursing, nursing management
3	39	Deputy Chief Nurse	Deputy Director of Nursing	Undergraduate	18	Neurology nursing, nursing management
4	53	Chief Nurse	Head Nurse	Undergraduate	34	Neurology Nursing
5	48	Deputy Chief Nurse	Head Nurse	Undergraduate	29	Neurology Nursing
6	40	Deputy Chief Nurse	Head Nurse	Undergraduate	18	Neurology Nursing
7	45	Deputy Chief Nurse	Head Nurse	Undergraduate	22	Neurology Nursing

The research team designed an expert meeting questionnaire based on the 26 indicators of care sensitivity for stroke patients initially screened. The contents of the questionnaire include a headline, basic expert information, an expert self-evaluation questionnaire, an evaluation of

the importance of sensitive indicators, and suggestions for revision. The foreword introduces the background, purpose, significance, and correct form-filling method. The basic information of experts includes age, title, position, education, working years, and research direction. Experts' judgments on the importance of sensitivity indicators are assigned values based on Likert's 5-level scoring method, ranging from "very unimportant" to "very important" from 1 to 5 points.

Criteria for inclusion of experts: Bachelor's degree or above, associate senior and above title, experience presiding over scientific research projects, a strong influence in-hospital stroke major, ten years or more of stroke care or management work, voluntary participation. In this study, seven nursing experts were selected; the expert information is shown in [Table 1].

2.4. Establishment and application of the nursing quality control system for stroke patients

The research team compiled the nursing-sensitive indicator data into a stroke patient care quality report. To avoid misunderstandings, team members gave detailed definitions of related terms. The study selected three hospitals to conduct small-scale pre-tests, debug the readability and operability of the case report, and form the first draft. A large-scale pre-test was performed in 17 hospitals in various regions. The nurses will fill in the case reports on the quality of care of stroke patients, continue to fill in the cases that meet the filling standards, and give feedback on their experience and suggestions. The requirements for the reported case include ① the age of onset is ≥ 18 years; ② the clinical diagnosis is one of the following diseases: ischemic stroke, primary cerebral hemorrhage (exclude traumatic cerebral hemorrhage); ③ the time of stroke event is before medical consultation Date ≤ 7 d.

After the stroke patient care quality case report form is confirmed, the CSCA data management cloud platform software builder will integrate the stroke patient care quality case report form with the CSCA data management cloud platform to realize the networked care quality control system for stroke patients.

From January to June 2019, voluntarily, nine hospitals were recruited to fill in data on the quality of care for stroke patients through the CSCA data management cloud platform. The requirements for filling in cases are the same as above.

3. Research results

3.1. Case report of the quality of care for stroke patients

The expert authority coefficient is evaluated based on the expert self-evaluation results. The expert self-evaluation results of the familiarity of the meeting content show that five are very familiar and two are relatively familiar. The self-evaluation results of the basis of judgment show that practical experience affects six people, theoretical analysis affects four people, and intuitive judgment affects six people. The expert self-evaluation familiarity coefficient is 0.943, and the authority coefficient is 0.921. According to expert suggestions, the indicators with poor sensitivity have been deleted, such as the evaluation rate of incontinent dermatitis, bedside elevation rate, fever treatment rate, blood pressure monitoring rate, evaluation rate of daily living ability, the incidence of constipation, the incidence of pipeline slippage, and other indicators. They increased the prevention rate of aspiration pneumonia and the incidence of post-stroke depression. Considering the operability, the incidence of catheter-related urinary tract infection was changed to the incidence of urinary

system infection. The nutritional assessment rate was changed to the nutritional risk screening rate within 48 hours of admission. Finally, 11 sensitive indicators of the quality of care for stroke patients were formed, as shown in [Table 2].

Table 2. Sensitivity Index of care quality of stroke patients

The nursing quality sensitivity index	Calculation formula
Evaluation rate of stroke scale of National Institutes of Health	$\frac{\Sigma \text{ Number of patients who completed the National Institutes of Health Stroke Scale assessment during the patient's hospitalization}}{\Sigma \text{ Total number of patients admitted to hospital}} \times 100\%$
Swallowing function assessment rate	$\frac{\Sigma \text{ Number of patients who completed the assessment of swallowing function during hospitalization}}{\Sigma \text{ Total number of patients admitted to hospital}} \times 100\%$
Deep vein thrombosis prevention rate	$\frac{\Sigma \text{ number of patients unable to walk within 48 hours of admission for deep vein thrombosis prevention}}{\Sigma \text{ Total number of patients unable to walk within 48 hours of admission}} \times 100\%$
Aspiration pneumonia prevention rate	$\frac{\Sigma \text{ Dysphagia prevention of aspiration pneumonia patients}}{\Sigma \text{ Dysphagia stroke patients}} \times 100\%$
Nutrition risk screening rate within 48 hours of admission	$\frac{\Sigma \text{ Number of patients undergoing nutritional risk screening within 48 hours of admission}}{\Sigma \text{ Number of stroke patients}} \times 100\%$
Good limb placement rate	$\frac{\Sigma \text{ Number of patients with paralyzed limbs placed in the position of good limbs}}{\Sigma \text{ number of patients with stroke and paralysis}} \times 100\%$
Early activity rate	$\frac{\Sigma \text{ Number of paralyzed patients who started early active activities within 48 hours}}{\Sigma \text{ Number of paralyzed patients with stroke}} \times 100\%$
Health education implementation rate	$\frac{\Sigma \text{ Number of patients who received health education at the time of admission, hospitalization, or discharge}}{\Sigma \text{ Number of stroke patients admitted to hospital}} \times 100\%$
Incidence of stress injury	$\frac{\Sigma \text{ Number of patients with pressure injury in the hospital}}{\Sigma \text{ Total number of patients admitted to hospital}} \times 100\%$
Incidence of urinary system infection	$\frac{\Sigma \text{ Number of patients with urinary system infection}}{\Sigma \text{ Total number of patients admitted to hospital}} \times 100\%$
Incidence of depression after stroke	$\frac{\Sigma \text{ Number of patients with depression since the onset of the disease}}{\Sigma \text{ Total number of patients admitted to hospital}} \times 100\%$

3.2. Case report of the quality of care for stroke patients

The research team established six sensitive indicators for aspiration pneumonia prevention rate, nutritional risk screening rate within 48 hours of admission, early activity rate, good limb placement rate, health education implementation rate, stress injury rate, and constructed stroke patients. NHISS assessment rate, swallowing function assessment rate, deep vein thrombosis prevention rate, urinary system infection rate, and post-stroke depression rate have been constructed in the medical quality module of the CSCA data management cloud platform. According to the case report on the quality of care of stroke patients, 17 hospitals filled in the sensitivity indicators of the quality of care of stroke patients and completed 298 copies. The 17 hospitals all reported that the sensitivity indicators of the quality of care for stroke patients could well reflect the quality of care for stroke patients. Five hospitals commented on the content of the case report form, and two hospitals raised questions about the filling method. The research team focused on the feedback, revised the case report on the quality of care for stroke patients, and formulated the filling instructions based on the feedback.

Table 3. A case report of the quality of care for stroke patients

Prevention of aspiration pneumonia in patients with dysphagia		
Patients with dysphagia have contraindications to enteral nutrition	Types of contraindications are: ① intestinal failure; ② hemodynamic instability; ③ accompanied by diseases that require fasting; ④ patients or family members refuse enteral nutrition	
Patients with dysphagia have no contraindications to enteral nutrition and can eat by mouth. Should they be given nursing care?	If yes, then: ① make the food into mud or paste; ② choose a sitting or semi-recumbent position (30°~45°) when eating; ③ maintain a sitting or semi-recumbent position for at least 30 minutes after eating; ④ instruct patients with hemiplegia to exercise Eat sideways; ⑤ eating speed is appropriate to avoid overlapping food intake twice; ⑥ swallowing methods of side swallowing, nodding swallowing, empty swallowing, and alternating swallowing; ⑦ eating with appropriate spoons; ⑧ grinding after eating.	No
For patients with dysphagia, there is no contraindication to enteral nutrition, and they cannot eat by mouth. Should enteral nutrition be given?	If yes, then: 1.) time to start enteral nutrition: ① within 24 hours of admission; ② 24 to 48 hours of admission; ③ 48 to 72 hours of admission; ④ 72 hours to 7 days of admission; ⑤ more than seven days of admission; ⑥ unknown 2.) Tube feeding methods are ① nasogastric tube, ② naso-intestinal tube, ③ percutaneous endoscopic gastrostomy 3.) Whether to give the following nursing measures: ① during and 30 minutes after tube feeding, the bed head is raised > 30°; ② using a nutrition pump to control the infusion rate; ③ monitoring the gastric residual volume regularly; ④ applying prokinetic drugs; ⑤ turn-over and pat the back before tube feeding, and suck up the respiratory secretions; ⑥ no	No
Are there complications?	1.) Pneumonia: ① Yes; ② No 2.) Diarrhea: ① Yes; ② No 3.) Constipation: ① Yes; ② No	
Nutritional risk screening		
Did the patient complete the nutritional risk screening within 48 hours of admission?	If yes, then: 1.) Nutritional screening tools used: ① European Nutrition Risk Screening Tool 2002; ② Subjective Comprehensive Assessment Method; ③ General Malnutrition Screening Tool; ④ Mini Nutritional Evaluation Method; ⑤ the hospital compiles the scale; ⑥ other 2.) Nutritional risk screening results: ① normal (whether weekly re-evaluation: yes, no); ② risky (whether professionals are asked to give nutritional assessment or intervention: yes, no)	No
Early recovery		
The patient was paralyzed during hospitalization	Whether the paralyzed limbs are placed in the position of the good limbs: yes, no	
During the hospitalization, the patient is not accompanied by paralysis, and there are no contraindications to active activities in the early stage (within 48 hours of stroke). Are early activities performed?	If yes, then 1.) Whether there is a rehabilitation teacher's guidance: ① Yes; ② No 2.) Activity mode: ① in-bed activity; ② get out of bed activity ③ activity frequency: ① daily; ② 3~4 times a week; ③ 1~1 week two times; ④ unknown 4.) Each activity time: ① ≥1 h; ② 30 min~1 h; ③ <30 min; ④ unknown	No

During hospitalization, the patient is not accompanied by paralysis, and there are contraindications for active activities in the early stage (within 48 hours of stroke)	The types of contraindications are ① with diseases that require immobilization; ② with diseases that require absolute bed rest; ③ disorders of consciousness; ④ the patient or family members refuse to move.	
Are there complications?	1.) Foot drop: ① Yes; ② No 2.) Muscular atrophy: ① Yes; ② No 3.) Deep vein thrombosis: ① Yes; ② No 4.) Pressure injury: ① Yes; ② No	
Health education		
Do you carry out health education?	If yes, then: 1.) Health education time: ① admission; ② pre-operative; ③ post-operative; ④ hospitalization; ⑤ discharged 2. Health education content: ① safety education; ② auxiliary inspection and education; ③ stroke risk factor education; ④ Early identification of stroke; ⑤ Thrombolytic therapy education; ⑥ Anti-thrombosis education; ⑦ Blood pressure management; ⑧ Glucose management; ⑨ Dyslipidemia management; ⑩ Diet education; Smoking cessation education; alcohol restriction education on rollers; rehabilitation guidance on rollers; psychological guidance on rollers; regular review of rollers 3.) Health education form: ① oral; ② manual; ③ group teaching; ④ multimedia (audio, video, PPT); ⑤ Telephone intervention; ⑥ Family visit; ⑦ Informatization (website, email, WeChat, mobile phone)	No

3.3. Results of data filling in the nursing quality control system for stroke patients

This study reported data on the sensitivity indicators of the quality of care for stroke patients. Nine hospitals reported a total of 1 827 cases, of which the NIHSS assessment rate was 73.7%, the swallowing function assessment rate was 61.7%, the prevention rate of deep vein thrombosis was 34.7%, the prevention rate of aspiration pneumonia was 74.8%, and the nutritional risk within 48 hours of admission The screening rate was 19.7%, the placement rate of good limbs was 96.5%, the early activity rate was 73.1%, the implementation rate of health education was 97.3%, the incidence of stress injury was 0.5%, and the incidence of urinary system infection was 0.1%. The incidence of post-stroke depression was 0.5%.

4. Discussion

4.1. It is necessary to construct a sensitivity index for the quality of care of stroke patients

Stroke is the main cause of death and disability in patients and is a major public health problem in the world [14], accounting for 23% of the burden of human disease. With the increasing aging of the population, the world will continue to present a high incidence of cerebrovascular disease, high disability, and high mortality in the future. Establishing sensitive indicators of nursing quality can enable hospitals to carry out their phased longitudinal comparisons and intuitively grasp the development trend of hospital nursing quality. It can be horizontally compared with the country, region, or benchmark quality level to clearly understand the hospital's nursing quality level, identify its shortcomings, and seek breakthrough points for improving the quality of care. Studies [3][8] show that specialties such as obstetrics, orthopedics, and operating rooms have established mature nursing quality-

sensitive indicators and are used in clinical practice. There still needs to be a scientific and systematic system of sensitive indicators for the quality of care for stroke patients. Therefore, it is urgent and practical to construct a suitable and specific sensitivity index of the quality of care for stroke patients, which can provide a reference for the evaluation and monitoring of the quality of care for stroke patients in my country and provide a theoretical basis for the establishment of a database of care quality.

4.2. The clinical applicability and specificity of the sensitive indicators of the quality of care for stroke patients are strong

Nursing quality management is the core of nursing management, nursing quality evaluation is the central link, and the selection of sensitivity indicators is the key to nursing quality evaluation. The self-assessment familiarity coefficient of the experts participating in the construction of the sensitivity index of this study is 0.943, and the authority coefficient is 0.921, which meets the expert qualification requirements of the Expert Meeting Law. After constructing the sensitivity index of the quality of care for stroke patients, this study conducted data collection, analysis, and feedback on the sensitivity index of 17 hospitals in the country. The opinions and suggestions of various hospitals were extensively listened to, and the nursing sensitivity index and nursing quality case report sheets of stroke patients were revised and improved. Also, the nursing sensitivity indicators and medical quality indicators constructed in this study are collected simultaneously in the CSCA data management cloud platform. Therefore, the connotation of nursing should be given top priority when selecting sensitive indicators. Stroke is a high-risk population of deep vein thrombosis. The analysis of the implementation of preventive measures for stroke deep vein thrombosis can provide a reference for standardizing the prevention of deep vein thrombosis. Dysphagia management is one of the sensitive indicators of the quality of care for stroke patients. Research hotspots include nursing-based swallowing function assessment, nutritional risk screening, and swallowing function rehabilitation. Health education plays a pivotal role in the secondary prevention of stroke. Various factors such as age, gender, economic status, and education level affect patient compliance. Clinical nurses are the main health education professionals for stroke patients. Therefore, the implementation rate of health education is one of the sensitive indicators of nursing quality. In addition, the nursing quality case report constructed in this study also integrates the content and form of health education, making health education a more specific measurement indicator. If the condition permits, the earlier stroke rehabilitation care is carried out, the better the patient's neurological function recovery and the better the prognosis. This study's sensitive indicators also includes early stroke rehabilitation, good limb placement, and foot drop and muscle atrophy caused by improper posture.

4.3. The construction of a stroke patient care quality control system is of great significance

Previous studies [2] have explored the construction of the nursing quality sensitivity index for stroke patients, but the nursing quality sensitivity index has yet to be measured and analyzed after its formation. Also, the nursing sensitivity quality index data collected by various hospitals has yet to be shared with resources, and it is impossible to fully understand the gap between the current state of care quality control of stroke patients in my country and the evidence-based guidelines. After constructing the sensitivity index of the quality of care for stroke patients, this study established a case report of the quality of care for stroke patients. Through the CSCA data management cloud platform, a quality control system for

stroke patient care has been constructed. As of June 2019, 9 hospitals in the country have participated in the first batch of pilot reporting and have shown high enthusiasm for reporting. Through the sensitivity index data reported in the stroke patient care quality control system, a "report-monitoring-feedback" stroke patient care quality management model can be formed. Realize real-time monitoring and timely feedback of clinical care to improve the quality of care for stroke patients and eliminate the gap between hospitals. Promote the transformation of stroke patient care to standardization, specialization, and uniformity. With the continuous improvement of the construction of nursing management information and the gradual formation of the concept of "replace experience management with evidence guidance." Nursing researchers can rely on the information platform to build a data platform for nursing quality sensitivity indicators and use the data platform to extract effective data. Scientific methods are used to analyze data, and objective data is used to guide quality improvement and support the continuous improvement of overall nursing quality. At the same time, nursing managers can use information platforms to share experiences, improve management shortcomings with a positive attitude, promote patient safety, and improve the quality of care for stroke patients.

5. Conclusion

In this study, the literature method, the expert meeting method, and the CSCA quality control indicator requirements were used for reference to construct 11 sensitive indicators of the quality of care for stroke patients. According to the nursing sensitivity index data reported by nurses, a report on the quality of care for stroke patients was compiled. Relying on the CSCA data management cloud platform, a stroke patient care quality control system was built, and data on the sensitivity index of stroke patient care quality was collected nationwide. After establishing the nursing quality control system for stroke patients, we can understand the implementation of standardized nursing for stroke patients through the analysis of the reported data. On the other hand, through the monitoring and feedback of the reported data, real-time monitoring, rapid feedback, and timely optimization of clinical nursing work for stroke patients are realized, helping, guiding, and supervising clinical nursing work and promoting continuous improvement of the quality of care for stroke patients. There are still shortcomings and areas for improvement in this research: fewer experts and regions are selected for the expert meeting, the experts are all undergraduates, and the educational structure could be better. The next step will be to expand the selection of experts and improve the academic structure of experts based on the collected data on the nursing sensitivity index of stroke patients.

Further, optimize the nursing sensitivity indicators of stroke patients to make them more scientific and practical. Nine hospitals were recruited for data reporting during the trial phase of the quality control system for stroke patient care. Due to the voluntary participation of hospitals, the enthusiasm for data reporting is high. The next step will continue to expand the scope of recruiting hospitals and promote the quality control system for stroke patients. The current stroke patient care quality control system cannot examine under-reporting and false-reporting data. This study will collaborate with clinical nursing experts, quality management experts, and software engineers. The method of automatically extracting data, uploading photos, or spot-checking on-site ensures the accuracy and completeness of the reported data. Due to the lack of management personnel and the limitation of data extraction technology, the research team feeds back the data reported by each hospital once a quarter, and the timeliness needs to be improved. In the future, a dedicated person will be responsible for extracting and

coordinating nursing quality data. And increase the number of data analysis and feedback personnel to improve the timeliness of data feedback.

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