



# An Analysis of the Development Trend of Nursing Safety Management Research in China

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## Abstract

**Objective:** Comprehending the development trend of nursing safety management in China, in order to provide reference for further research.

**Methods:** Search for papers published in 2000-2011 related to nursing safety management in China from Wanfang Data, Chongqing Weipu, CNKI and other important databases, then use the bibliometric method, network measurement method, content analysis method to statistics and analysis the data.

**Results:** 535 papers of nursing safety management were retrieved, respectively from 8 Chinese nursing journals. From 2000 to 2011, the number of papers of nursing safety management in China increased linearly, but only 99 papers have been supported by the fund project. Most authors come from economically developed areas, such as Beijing, Guangdong, Jiangsu, Hubei, Zhejiang, Shanghai and so on. The main research areas included patient safety management, nursing technical safety, safety strategy development, safety culture, occupational protection and so on.

**Conclusions:** The research on nursing safety management in China has made great progress, with wide research areas and rich research contents during 2000 to 2011. However, there are many problems to be improved, such as the development of nursing safety management in various regions is not balanced, the lack of nursing research project support, nursing safety management research cross-professional cooperation and international cooperation is not enough, the results of nursing safety management research exchange is not enough and so on.

**Keywords:** Nursing safety management; Nursing journals; Research status; Forecast trends; Document analysis

## Introduction

Patients safety is a priority for health services in all countries and is the core index for evaluating nursing quality. Clinical nursing is a kind of highly professional service, which is characterized professional,

complexity, interdependence, uncertainty, and high-risk [1]. Adverse safety incidents not only pose a threat to the life of the patient but also increase the financial burden on the patient [2]. Carry out the management of nursing safety is the prerequisite to improve nursing quality. Nursing safety management refers to the application of systems, technology, education and other measures to effectively prevent the occurrence of nursing accidents and create a safe, healthy and efficient care environment for patients [3]. Many researchers have proposed to promote the management of nursing safety by changing the working environment for nursing care [4], innovating nursing operation techniques [5], using information technology for nursing safety [6], and encouraging patients involvement in nursing safety [7] and others. Nursing safety management involves many aspects, such as nurse safety training, nursing safety environment, nurse-patient communication, nursing safety operation technique and so on. Patient safety is a global problem. China, as the largest developing country, has also made progress in patient safety. Since 2000, the Chinese health department has further emphasized the importance of patient safety and put forward a series of strategies to ensure patient safety. Many Chinese nursing experts have done a lot of research on nursing safety management. This study retrieves papers about nursing safety management during the period of 2000-2011 in China, analyzing the achievements and deficiencies of the research on nursing safety management in China, and points out that the current hot topics in China's nursing safety research, which can provide references for the development of other countries' nursing safety with similar national conditions in China.

## Methods

**Design:** To achieve a highly sensitive search strategy, databases were searched from their inception to December 30, 2011. Using "nursing safety management" as the keyword, retrieve papers about nursing safety management in Chinese databases such as Wanfang Data, Chongqing Weipu, CNKI. And only choose papers published in eight Chinese core nursing journals, such as Chinese Nursing Research, Chinese Journal of Modern Nursing, Chinese Nursing Management

Journal of Nursing Science, Chinese Journal of Practical Nursing, Nursing Administration, Chinese Journal of Nursing, Journal of Nurses Training and so on. Then the contents of the retrieved papers are repeatedly read, analyzed, filtered, and excluded from the topic of nursing safety management.

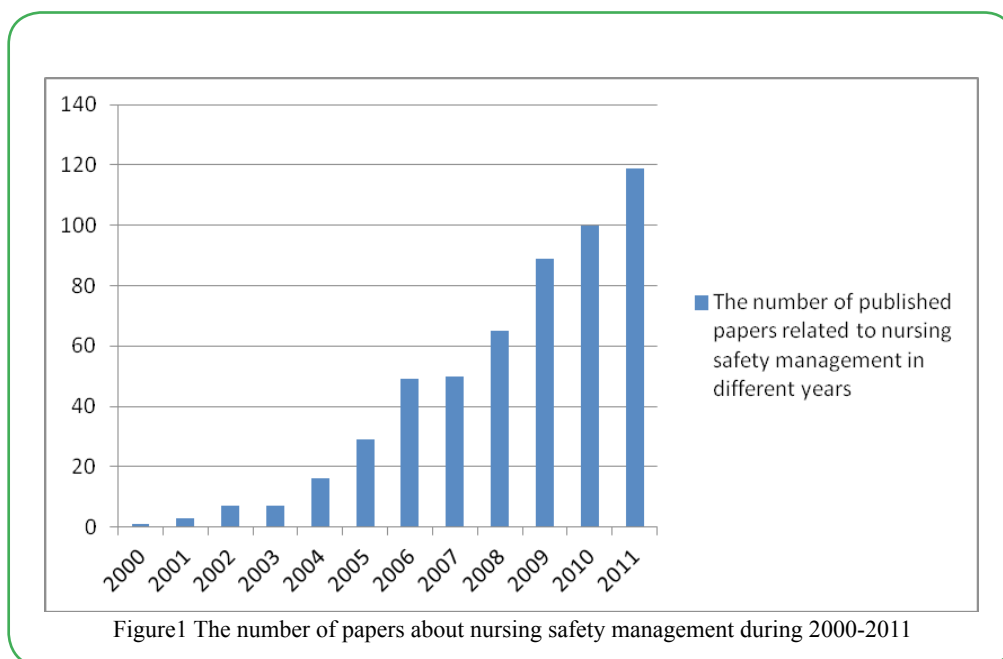
**Data count:** Bibliometrics and webometrics approach was used to count the total number, category, geographical distribution, the main research areas and content.

**Data analysis:** Using Charts to present the data results. The findings were analyzed using the content analysis approach to understand the “study hotspots” “study level” and “development trend” of the nursing safety management research in China.

## Results

### Number of papers about nursing safety management during 2000 to 2011

A total of 578 papers related to nursing safety management were retrieved in Chinese eight core nursing journals. After these papers were read, analyzed and filtered repeatedly, 43 papers that were not closely related to nursing safety management were excluded, and 535 papers were finally selected. The number of papers related to nursing safety management during 2000 to 2011 were 1,3,7,7,16,29,49,50,65,89,100,119 respectively, as shown in Figure 1.



The total number of papers about nursing safety management published in Chinese Nursing Research, Modern Nursing, Chinese Nursing Management, Journal of Nursing Science, Chinese Journal

of Practical Nursing, Nursing Administration, Chinese Journal of Nursing, Journal of Nurses Training were 89, 88, 80, 69, 64, 59, 49, 37 respectively, as shown in Table 1.

Journal	n	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Chinese Nursing Research	89	0	0	1	1	2	11	5	6	10	14	15	24
Chinese Journal of Modern Nursing	88	0	1	0	0	1	1	9	9	7	12	26	22
Chinese Nursing Management	80	0	0	2	2	6	1	10	11	16	9	9	14
Journal of Nursing Science	69	0	1	0	0	0	2	7	7	9	15	11	18
Chinese Journal of Practical Nursing	64	0	0	2	0	3	5	6	7	10	6	7	17
Nursing Administration	59	0	0	0	1	1	5	7	6	4	15	9	11
Chinese Journal of Nursing	49	0	0	0	2	3	3	2	3	5	8	17	6
Journal of Nurses Training	37	1	1	2	1	0	1	3	1	4	10	6	7
total	535	1	3	7	7	16	29	49	50	65	89	100	119

Table 1. The number of papers about nursing safety management published on eight Chinese core nursing journals in 2000-2011

### Geographical distribution of the paper authors

The number of authors were from Beijing (108), Guangdong (59), Jiangsu (53), Hubei (52), Zhejiang (44), Shanghai (32), Shandong (22), Sichuan (22) (16) Fujian (8) Henan (5) Hunan (3) Hebei (3) Yunnan (2) Anhui (1) Qinghai (1) Hainan (1) and California (1) were 108, 59, 53, 52, 44, 32, 22, 22, .8, 5 ,3 ,3, 2,1, 1, 1, 1 respectively.

### Paper quality analysis

In general, an article is considered a high-quality article if it has been supported by the fund, has multiple collaborators, or has been cited frequently, so this study has counted the number of articles

supported by the fund, number of collaborators and cited times per article. Total 535 papers, there were only 99 papers were supported by the found project, accounts for 18.50%. 535 papers on nursing safety management were cited 3337 times, and the number of citations of papers about nursing safety management published in Chinese Journal of Nursing, Nursing Administration ,Chinese Nursing Research ,Chinese Journal of Practical Nursing, Chinese Nursing Management, Journal of Nurses Training, Journal of Nursing Science, Chinese Journal of Modern Nursing were 1272,516 , 398,397,321,183,235,113 respectively, see Figure 2.

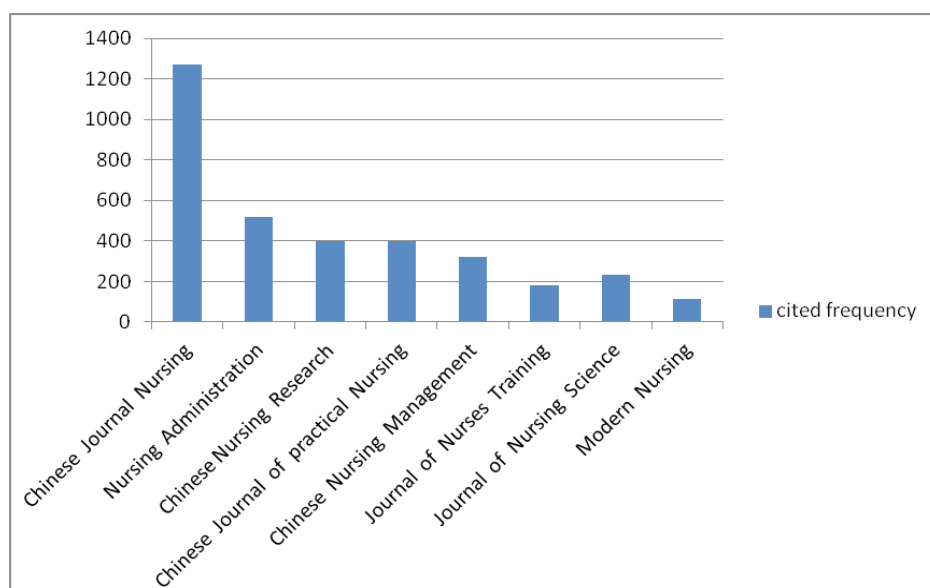


Figure 2. The distribution of the cited frequency of the 8 professional nursing journals

In addition, this study counted papers cited more than 10 times in each journal and defined them as highly cited articles, and counted papers with more than three authors and defined them as highly

collaborative papers, the number of highly cited papers and highly collaborative papers about nursing safety management in each journal was shown in Table 2.

Journals	the number of highly cited papers	the number of highly col- laborative papers
Chinese Journal of Nursing	18	26
Nursing Administration	13	22
Chinese Nursing Management	10	19
Chinese Nursing Research	11	24
Chinese Journal of Practical Nursing	9	8
Journal of Nursing Science	8	19
Modern Nursing	2	38
Journal of Nurses Training	5	14
Total	76	170

Table 2 the number of highly cited papers and highly collaborative papers about nursing safety management in each journal

### Paper content analysis

Total 535 papers, the number of nursing safety research, review, case and empirical papers were 377,18,46,94 respectively. This study analyzed the clinical departments involved in 535 papers, included operating theaters, clinics, emergency rooms, psychiatry, obstetrics and gynecology, maternal and infant rooms, ICU, ophthalmology, internal medicine, neurology, neurosurgery, epileptic wards, oncology, radiology, Key departments, disinfection supply room, dialysis center, endoscopy center, supply room, dialysis room and so on. Research areas included patients safety management, safety of nursing operations, nursing safety technology innovation and so on.

In the area of patient safety management, in addition to the safety management of patients undergoing surgery, the elderly, children, maternal, schizophrenia, critically ill patients, ophthalmic patients and neurosurgical patients, there are also tumors, dialysis, hematopoietic stem cell transplantation, Alzheimer's disease, hyperbaric oxygen therapy, special patient safety management, safety management in nosocomial infection and evidence-based care, and introduction of foreign nursing safety management experience.

Researches of nursing operational safety, which explores how nurses can protect their patients and their own safety when they perform intravenous fluids, PICCs, indwelling catheters, central venous catheters, specimen collection and specimen shipments,

inspection of critical value reporting systems, pipeline care, RICU ventilator, micro-injection pump, the use of medical equipment, the use of acupuncture and other operations.

To further ensure the safety of patients and nurses, many researchers have improved existing nursing safety technologies or invented new technology, such as identification cards, blood type cards, safety signs, bedside reminder cards, specimen bags, transfer records, patients Co-existence of disease identification card, nursing safety card, pressure ulcer protection and identification of protection programs, diet safety management records.

In addition to the above three major areas, many researchers also explored nurses' psychological safety, safety culture, care concept, clinical nursing teaching safety management, early warning and monitoring, safety management network, nursing and safety management in community and retirement institutions.

Total 535 papers, the number of research papers on nursing safety laws and regulations, surgery patient safety study, medication safety, infusion operation safety research, elderly patient safety nursing research, mental illness safety nursing research, pediatric safety nursing research, fall accident prevention research, international advanced experience exchange research, medical waste safety management research and disaster nursing safety were 88,70,67,55,47,21,13,17,11,6,5 respectively, as shown in Figure 3.

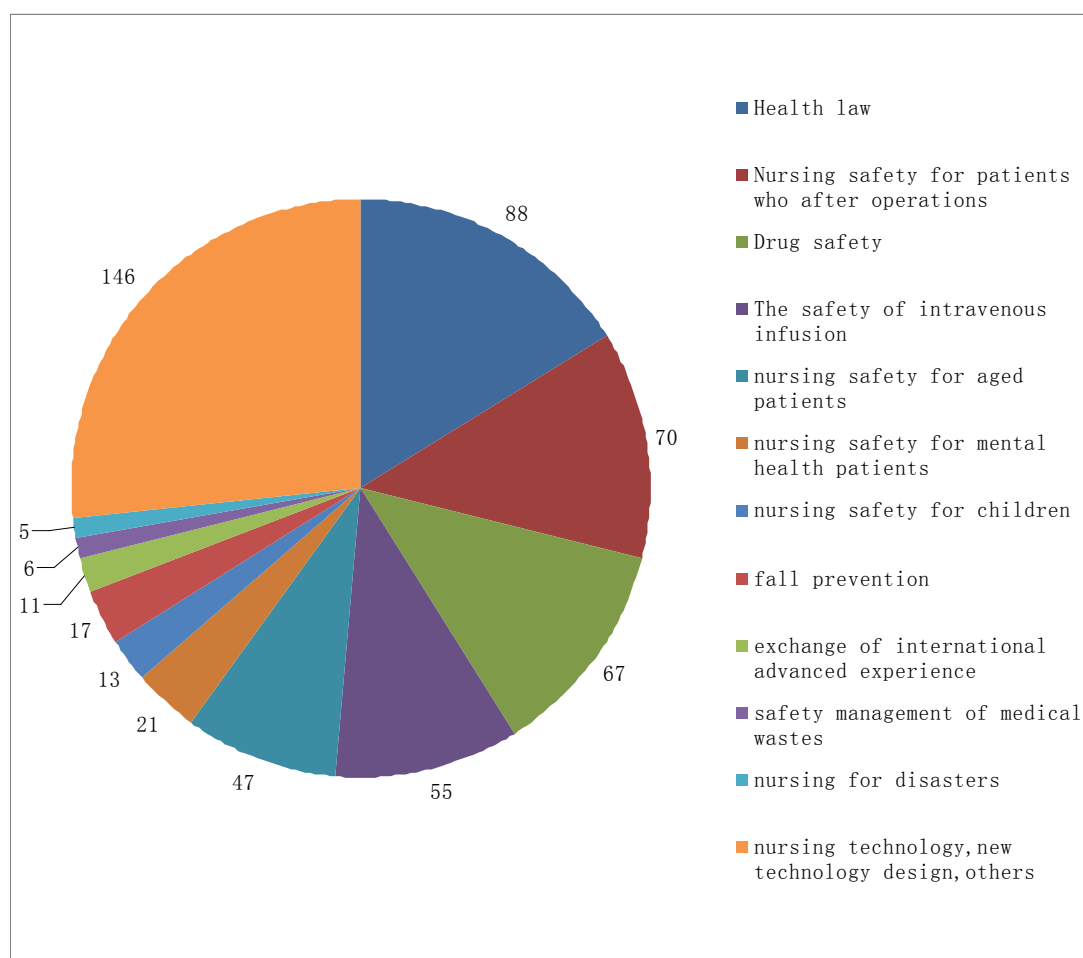


Figure 3 The main research contents of nursing safety management in China

## Discussion

### The number of papers showed a linear increase

As can be seen from Figure 1, the number of papers about nursing management in China showed rapid growth since 2000 to 2011, the number of nursing safety management papers in 2011 increased by 100 times than the year of 2000. This was also proved from the number of papers related to nursing safety management published in each journal of each year in Table 1. This result is related to the decision taken by Chinese medical authorities in 2000 to start strengthening the management of nursing safety. Since 2000, China has adopted a series of measures to strengthen the management of nursing safety, which has prompted nursing managers and researchers to pay more attention to the research on nursing safety management. After 12 years of hard work, the research level of nursing safety management in China has gradually increased, and the number of papers on nursing safety management has been increasing year by year.

### Showing a trend of regional concentration of nursing safety management research

From the result of geographical distribution of the paper authors, it shows that the geographical distribution of researches about nursing safety management is extensive, and well-developed economic areas (such as Beijing, Guangdong, Jiangsu, Hubei, Zhejiang, Shanghai) have led to a trend of regional concentration. This distribution is consistent with the level of economic development of China. The development of economy has driven the development of nursing safety management, and the level of research illustrates the overall regional capacity of nursing safety management. The reasons can be summarized as follows: a) economically developed regions are likely to obtain financial support; b) the progress of the economy enables researchers to gather more information and create a broad platform to learn and communicate with each other [8]. The results suggest that future studies should highlight the need for collaboration to coordinate and promote the development of nursing safety management in various regions and achieve Chinese patient safety goals.

### The Nursing safety management research field is getting wider and the research content is more and more rich

Based on the analysis of the contents of 535 papers, it can be seen that the research about nursing safety management in China covers a wide range of areas, including patient safety management, nursing technical safety, safety strategy development, safety culture, occupational protection and so on. And the research content is rich, including nursing safety laws and regulations research, surgical patient safety research, medication safety, infusion operation safety research, elderly patients nursing care research, mental illness safety nursing research, pediatric safety nursing research, fall prevention event research, international advanced experience exchange research, medical treatment waste safety management research, disaster safety research and new nursing safety technology. This shows that in the crucial decade of 2000-2011, the development of China's nursing safety management has been rapidly developed. With the emphasis on patient safety in China's healthcare sector, researchers dedicated to nursing safety have also sought to find new research sites to further enhance the safety of nursing, its research covers all aspects of medical safety and plays an important role in promoting the development of nursing safety management in China.

### The support for nursing safety management research is insufficient

In China, there are five types of research fund grants: the National Natural Science Foundation of China, the national key research topic, provincial and ministerial funds, municipal funds and other funds. Papers funded by the project fund often represent new trends, new trends and development directions in a research field and are

of high value. In this study, total 535 papers about nursing safety management, there were only 99 papers were supported by the found project, accounts for 18.50%. It can be seen that the Chinese government does not support enough the research on nursing safety management, which may be related to the late development of nursing industry in China. The traditional view is that the nursing profession is not as important as the doctors and the medical sector does not pay enough attention to nursing, which leads to the lack of support for nursing research, some countries in the world may have similar situations. In fact, nurses, as close contacts with patients, are most likely to observe the patient's condition changes and take appropriate measures to prevent patients from accidents, which is important for the maintenance of patient safety [9-10], and strengthening nursing safety research is also of great significance to improve patient safety [11]. In addition, related research also shows that there is a growing interest in the promotion of nurses' research activities [12]. So this study suggests government and health departments should strengthen the support for nursing research, to help nurses vigorously carry out nursing-related research to promote the development of nursing and patient safety.

### Nursing safety management research results exchange is insufficient

In general, the number of times that a paper was cited by other authors reflects the influence and dissemination of the findings of the paper. This study counted papers cited more than 10 times in each journal and defined them as highly cited articles. As can be seen from Table 2, among 535 papers about nursing safety management, only 76 highly cited papers, this reflects nursing safety management research results exchange is insufficient. This may be related to the late start of China's nursing safety management research.

### The status quo and existing problems of collaboration about nursing safety management research

The number of authors required to complete an article reflects the trend of scientific collaboration to a certain extent. The more authors of an article, the greater the scale of cooperation, and also to some extent reflect the difficulty of the study. This study defined papers with more than three authors as highly collaborative papers. From Table 2, among 535 papers about nursing safety management, 170 belong to collaborative research papers, which shows that researchers in China's nursing security pay great attention to inter-professional cooperation. However, this study found that the lack of interdisciplinary cooperation and international cooperation in these studies, this may be related to the lack of opportunities and platforms for international exchange by research institutions, which is not conducive to the development of nursing safety management research. Strengthening international cooperation is very necessary for the promotion of scientific research, some research pointed out that nursing research should strengthen cross-professional cooperation and international cooperation, thus contributing to the content of nursing safety management research richer and make it with the latest international research standards [13]. The government should actively provide researchers with a platform for international exchanges and promote international cooperation and exchange so as to jointly promote the realization of global goal of patient safety.

### Prospect of research on nursing safety management in China

#### Patients for Patient Safety

Patients for Patient Safety (Patients for Patient safety, PFPS) as an important strategy advocated by the WHO to protect the safety of patients, emphasizes advocacy and encourages patients to actively participate in the maintenance of patient safety [14]. PFPS pays attention to patients' participation and protection of rights and interests in patient safety, embodies the concept of patient-centered medical service, can harmonize the relationship between doctors and



patients, protect patient safety and improve the quality of medical treatment [15]. Since 2008, the Chinese Hospital Association has “encourage patient engagement in patient safety” as one of the goals of patient safety in China and added an evaluation of patients engagement in patient safety in the hospital accreditation system. Many researches have explored the theoretical significance and management philosophy of PFPS in China. However, due to the current medical environment in China, there is not enough research on the specific implementation of PFPS. Future research will draw on the experience of developed countries to promote patient for patient safety work.

### **Nursing safety management concept innovation**

Root cause analysis, patient safety culture, and risk management mechanisms are important ways to ensure nursing safety [16-18]. The research on these three aspects is gradually being carried out in China. The root cause analysis, establish a patient safety culture and risk management mechanism is new concept in nursing safety management. The system reason is the root cause of nursing defects, education and training factors are the most common root causes, communication factors, job tasks factors, organizational management factors, environmental equipment factors; the concept of introducing patient safety culture including patient safety visits, voluntary reporting system, team Cooperation and communication skills training, patients for patient safety, education and training activities, the rational allocation of human resources nurses, and strengthen the training of the overall quality of the nursing team. Although some progress has been made in the innovation of Chinese nursing safety management concept, future research should further strengthen this area.

### **Nursing safety management laws and regulations**

At present, China's nursing safety regulations gradually improve and develop. With the development of new medical laws and regulations, the management of nursing safety will be shifted from the traditional “rules and regulations” management to “law-based” management. However, the current reform is mostly limited to the minutiae repair and improvement, to achieve systematic management of nursing safety management needs the majority of care workers continue to explore. Improve the management agencies and institutions, establish a scientific concept of safety management, and actively open up channels for patients to participate in safety management is the focus of nursing safety management research.

### **Hierarchical management of nursing safety**

At present, Chinese hospitals practice a grading nursing system, which grades nursing care according to patient's condition and gives corresponding nursing measures, which effectively protect the safety of hospitalized patients. However, the level of care the patient needs is determined by the doctor, not the nurse. Therefore, Chinese nursing safety researchers are still trying to do nursing grading research. It is expected that a nurse will decide on the level of care needed by the patient rather than the doctor. This will ensure the nurse's initiative and further ensure the safety of patients.

### **The use of information technology in nursing safety management**

With the development of information technology, its application in the field of nursing safety is getting more and more attention. Information technology can promote the implementation of nursing safety management so as to ensure the safety of patients and medical staff [19]. At present, China has such as VF3000 intelligent inspection system, intelligent inspection system, operating room mobile care information management system, operating room information management system, electronic medical records information management system, electronic hospitalization patient identity management system, emergency door infusion information management software Mobile clinical information systems and other

information technology, so that patient safety has been effectively protected. However, these technologies are far from meeting clinical needs, researchers are exploring more optimized nursing safety management systems to further ensure patient safety. In addition, The development of information security in the field of nursing security will inevitably require the training of nurses to enhance their information literacy [20]. So Research on nurses' information literacy training is also a hot topic in China at present.

### **Conduct nursing safety management courses during nursing students in school**

To enhance nursing students' awareness of nursing safety management and help them to effectively carry out their work in clinical practice, China's nursing school pays more attention to nursing safety management courses for nursing students. But due to the fact that it has just started, the current curriculum is not yet mature, and many researchers in China are doing research in this area.

### **Conclusion**

With the growth of China's economy, the national health department attaches great importance to patient safety and the patient's demand for medical security is increasing. The research on nursing safety management in China has made great progress during the year of 2000-2011, with wide research areas and rich research contents. Patient safety management, nursing technical safety, safety strategy development and safety culture are the main themes of Chinese nursing safety management research. However, there are many areas for further improvement, such as the development of nursing safety management in various regions is not balanced, the lack of nursing research project support, nursing safety management research cross-professional cooperation and international cooperation is not enough, the results of nursing safety management research exchange is not enough and so on. Government departments should take measures to solve these problems, such as increasing support for nursing research and providing nurses with opportunities and platforms for international exchanges. At the same time, nursing researchers will also carry out important research on these issues to promote the improvement and development of nursing safety management, and work with nursing researchers in other countries to jointly promote and safeguard patient safety in the world. What's more, despite Chinese nursing researchers has carry out many studies about patients for patient safety, nursing safety management concept innovation, nursing safety management laws and regulations, hierarchical management of nursing safety, the use of information technology in nursing safety management and conduct nursing safety management courses during nursing students in school and so on, but it still needs to be further explored and in line with international standards.

**Conflict of Interest:** All the authors declare no conflicts of interest

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