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## Review

# Nurse turnover research in China: A bibliometric analysis from 2000 to 2015

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## ABSTRACT

**Objectives:** The study was conducted to make a bibliometric analysis of published literature in order to assess the research status of nurse turnover in China.

**Methods:** We obtained 239 papers from two major electronic databases, CNKI and Wanfang from 2000 to 2015 (updated to 31st, December). Articles in languages other than Chinese were excluded. The keywords used were ‘nurses’ or ‘nursing staff’ and ‘leave’ or ‘intend to leave’.

**Results:** A total of 239 articles met the inclusion criteria, including 33 masters’ dissertations and 206 journal articles. 206 articles were published in twenty-five kinds of journals in China. Nursing journals had the biggest share, about (88%, 181/206). 82% (196/239) articles are quantitative research. 239 articles come from 26 different provinces, cities or autonomous regions. The top ten regions which have the largest number of publications are Beijing, Shandong, Shanghai, Guangdong, Heilongjiang, Jiangsu, Hunan, Zhejiang, Hubei, Liaoning provinces. The coauthored articles account for 75% of all the publications. Only a small fraction of research works has obtained fundings.

**Conclusion:** Further studies are greatly needed on the development of sound measures to tackle nurse turnover and shortage. The following improvements should be made, such as strengthening nursing researcher’ consciousness and capability and increasing nursing fundings in China.

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## 1. Introduction

With rapidly growing and aging population in the world, the widespread nursing shortage and nurses' high turnover rate have been becoming a global issue [1]. Over the past decade, constantly, looking for measures has been taken to solve these problems, such as increasing the number of nurses [2,3]. However, nurse shortage remains an unsolved issue. According to the reports, 13% of the newly registered nurses quit their jobs in the first year after work, and 37% of nurses choose to leave their nursing profession [4], and nursing shortage will reach 1.05 million by 2022 [5]. Therefore, reducing nurse turnover rate is an important way to alleviate the shortage of nurses [6].

China also faces a severe nurse shortage and high nurse turnover rate. According to the Ministry of Health estimated that the nursing workforce in China was 2,244,000 persons—a ratio of 1.85 nurses per 1000 people [7]. The long-term development planning for medical and health personnel (year 2011–2020), there were only 2,783,000 registered nurses (RNs) in 2013, With an increasing aging population, 2,860,000 and 4,450,000 RNs are needed by the end of 2015 and 2020 respectively [8]. The number of graduates from all programs each year is not sufficient to meet the needs of the country. Furthermore, nurses' poor working conditions are related to the shortage. Conditions include the hard work and relative lower pay that causes work stress and dissatisfaction, the nurse turnover rate is increasing [9]. According to Tang, the loss of nursing staff is most severe in the eastern regions, with a nurse turnover rate of 18.69% [10]. The government has paid more and more attention to the construction of nursing team [11], and a large number of studies have been performed on the turnover of clinical nursing staff. But there is a lack of a bibliometric analysis over nurse turnover in China. To this aim, this study was performed to have a better picture of nurse turnover studies in China.

## 2. Methods

### 2.1. Inclusion criteria

Based on 'China science and technology periodical citation report' published in 2014, we chose publications from Chinese core journals with impact factor above 0.5 and masters' dissertations.

### 2.2. Exclusion criteria

The following studies were excluded: (a) duplicated publications, conference minutes and papers which don't provide in-depth research and analysis of nurse turnover. (b) Papers on non-clinical and on-the-job nurses such as training nurses, nurses students, and practice nurses. (c) Articles which don't provide sufficient research information or data.

### 2.3. Searching strategy

The literature retrieval was led by a research supervisor and implemented by a doctor and three research students, four nursing staffs and a doctor. The keywords used were 'nurses' or 'nursing staff' and 'leave' or 'intend to leave', 239 papers on nurse turnover were obtained from two major electronic databases, CNKI and Wanfang from 2000 to 2015 (updated to 31st, December). Research subjects of these studies cover theoretical research, quantitative or qualitative research on nurse turnover.

### 2.4. Searching results

A total of 1121 articles met the inclusion criteria. 612 and 509 articles come from CNKI and Wanfang databases respectively. 882 articles were excluded, leaving 239 articles consisting of 33 master dissertations and 206 journal articles.

## 2.5. Data abstraction

The following data were retrieved from the included articles, including publication time, journal names, research type, geographical information, coauthorship, funding source and research subject.

## 3. Results

### 3.1. Publication growth from 2000 to 2015

As shown in Fig. 1, the first article on nurse turnover dated back to 2000. There were only five articles on nurses turnover published from 2000 to 2006. The amount of relevant articles grew to 9 in 2007. Since 2007, the number of articles has been increasing significantly. Although the total number of articles published in 2011 is less than that in 2010 and thirty articles have been published in 2015, the total amount of published relevant articles shows a growing trend as a whole from 2007 to 2015.

### 3.2. Published journals

Of the 239 identified articles, 206 were published in twenty-five kinds of journals in China, which are mainly distributed in the field of nursing, health management, medicine, psychology. Nursing journals had the biggest share (87.8%, 181/206) (see Table 1), followed by journals of health management (6.8%, 14/206), medical journals (4.4%, 9/206) and psychological journals (0.97%, 2/206).

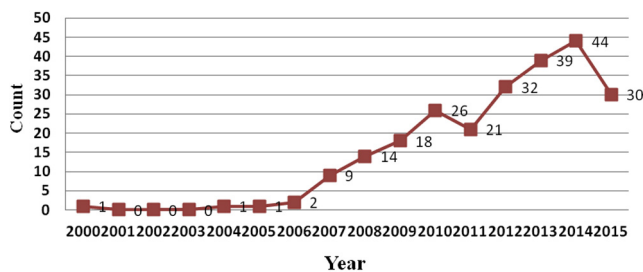


Fig. 1 – The number of publications on nurses turnover from 2000 to 2015 in China.

Table 1 – The journal names of included articles.

Journal name	Number of publications	Percentage
Chinese Nursing Management	32	17.7
Chinese Nursing Research	31	17.1
Journal of Nursing Administration	29	16.0
Chinese Journal of Modern Nursing	22	12.3
Journal of Nursing Science	17	9.4
Chinese Journal of Practical Nursing	16	8.8
Chinese Journal of Nursing	13	7.2
Nursing Journal of Chinese People's Liberation Army	10	5.5
Journal of Nursing(China)	5	2.8
Journal of Nurses Training	3	1.7
Modern Clinical Nursing	3	1.7

### 3.3. Type of research

The study types of the 239 articles can be divided into three different categories: theoretical research, quantitative and qualitative research. 82% (196/239) articles are multi-center cross-sectional quantitative surveys, which concentrate on the descriptive analysis and influential factors of nurse turnover. 13.8% (33/239) articles are theoretical researches, which mainly summarize nurse turnover experience, management experience, and theories of countermeasures. However, qualitative researches only account for 4.2% (10/239) of publications.

### 3.4. Geographical analysis

92 and 89 articles were published by nursing staff in hospitals and medical schools respectively. Only one article comes from research institute. Regarding geographical distribution of these publications, 239 articles come from 26 different provinces, cities or autonomous regions. The following ten regions have the largest number of publications: Beijing, Shandong, Shanghai, Heilongjiang, Guangdong, Jiangsu, Hubei, Hunan, Zhejiang, Liaoning, (Fig. 2).

### 3.5. Coauthorship

75% (178/239) articles are coauthored. The number of co-authors ranges from one to thirteen (mean, 2.8 coauthors).

### 3.6. Research funding

Only 19.2% (46/239) articles have fundings, which consist of 47.8% (22/46) provincial and municipal fundings, 8.6% (4/46) national fundings, 17.4% (8/46) medical school fundings, 21.7% (10/46) hospital fundings and 4.3% (2/46) fundings from other sources. Regarding the regions of fundings, Beijing, Shandong, Shanghai, Guangdong, and Heilongjiang have the largest number of nursing fundings.

### 3.7. Research field

The articles mainly focus on three aspects of nurse turnover: the current status of nurse turnover, influential factors (Table 2), relevant suggestions and measures to stabilize the nursing team. 10, 7, 5, 4, 4, 3, 3 studies were conducted on nurses of the department of emergency, pediatric department, community, operation room, ICU, tumor department, psychiatric department respectively. The contracted nurses turnover is

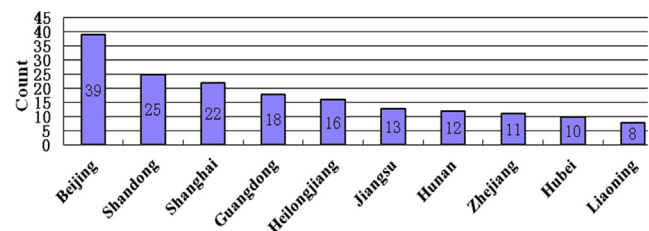


Fig. 2 – The geographical distribution of articles from 2000 to 2015 in China.

**Table 2 – The research subjects of included studies**

Relative factors	Number of publications	Percentage
Organizational commitment	29	14.1
Job satisfaction	26	12.6
Work stress	22	10.7
Work environment	17	8.3
Work value	16	7.8
Work family conflict	11	5.4
Occupational identity	10	4.9
Psychological empowerment	7	3.4
Social support	5	2.4
Others	63	30.5

consistently a focus for studying nurse turnover in China, 32 studies were employed on contracted nurse turnover. Moreover, with an increasing number of male nurses, there exist 13 studies on male nurse turnover.

#### 4. Discussion

In this study, we have seen an increasing number of publications on nurse turnover from 2000 to 2015, suggesting nursing managers and researchers became to pay attention to the problem of nursing staff turnover. The reasons might be associated with the severe shortage of nursing human resource, the need of nursing professional development and the orientation of national policy [12,13]. Another important finding in our study is that 72.8% of studies were conducted mainly in coast regions which are densely populated, such as Beijing, Shandong, Shanghai, Guangdong, Heilongjiang, Jiangsu, Hunan, Zhejiang, Hubei, Liaoning provinces, and other 16 provinces only contribute to 27.2% of the publications, which shows the imbalance of research consciousness, capability and the divergence of attention paid to nurse turnover in China. It also suggests that Chinese nursing researchers should expand the depth and breadth of research on nursing turnover, strengthen their research consciousness and ability.

It is generally acknowledged that the number of authors, to a certain extent, can indirectly reflect the research cooperation level, the depth and breadth of the studies and the quality of research results [14]. Our study found the coauthor rate is only 75%, which is far lower than 92.71% reported by Cheng jinlian [15]. The cooperation degree of the authors is 2.80, which is lower than 3.71 reported in Chinese S&T journal citation reports [16]. These results suggest further improvement has to be made to increase coauthor rate and the cooperation degree of authors in the future.

Research funding aims at promoting the innovation and application of scientific theory and further strengthening the rigor and normative of scientific research to develop more individuals and groups with research ability [17]. From the perspective of supporting foundation, only a small fraction of research works had obtained fundings. In particular, only 4 studies were supported by national fundings, which reflects the government didn't pay much attention to the field of nurse

turnover and nursing researchers need to improve their research consciousness and ability to apply for fundings.

Hayes reported that the research focus of nurse turnover ranges from theoretical exploration, assessment tools, influential factors to consequences, there are few reports over the effective measures to reduce nurse turnover rate [18]. Similarly, much more attention has been paid to current status, influence factors and its correlation in the field of nurses turnover in China. Many measures have been employed to reduce the rate of nurse turnover depending much more on the political policy level, such as improving welfare benefits, increasing the chance of promotion [19–21]. However, there are few reports on exploring more operational intervention strategy to guide nurses to develop their own potential and maintain professional self-esteem from the perspective of nurses. In addition, nurse turnover has been intensively studied in the departments of emergency, pediatrics, operation room, ICU, and tumor, partly due to higher pressure [22,23], worse working environment, complicated interpersonal relationship [24,25], the failure of relieving the fatigue and tension shortly [26]. Male nurse turnover is becoming another research subject. Nowadays, with the development of education, change in healthcare service models and promotion of gender equality in education and employment, it has offered many chance to males to play increasingly important part in the healthcare service. However, it remains difficult for male nurses to escape some traditional gender stereotypes and the problem of males nurse turnover has aroused more and more attention [27]. Some researchers reported that male nurses have medium level of intention to leave their profession and they are more eager to obtain professional empowerment and social support as compared with female nurses [27,28]. Much attention has been placed to contracted nurse turnover, as unequal treatment severely weakens their working motivation and causes a high rate of job dismissal in comparison with enrolled nurses [29].

#### 5. Conclusion

This study made a comprehensive analysis of all included articles and showed the present status, focus and perspectives of research on nurse turnover in China. Further studies are greatly needed on the development of sound measures to tackle nurse turnover and shortage. The following improvements should be made, such as strengthening nursing researcher' consciousness and capability and increasing nursing fundings in China. However, the following limitations were identified. Firstly, the publications came from two databases, CNKI and Wanfang. Data from other sources on nurse turnover might be ignored. Furthermore, all the included articles are in Chinese, therefore, which might cause ignorance of many articles published in other languages.

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