Research spot and trend of integrative nursing in breast diseases based on data mining

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Abstract

Objective: To explore the development status, research hotspots and future development trend of traditional Chinese medicine nursing in the field of breast diseases by the bibliometric method. **Methods:** using CNKI, Wanfang, VIP and SINOMED databases as data sources, the literature related to breast traditional Chinese medicine nursing were obtained by keyword search, and BICOMB 2.01 was used to extract and count the information such as publication year, keywords and so on, and the word matrix was formed. SPSS 21.0 was used to cluster the extracted keywords. **Results:** a total of 839 articles were included, which came from 348 journals and 48 high-frequency words. Four main research topics were formed by keyword clustering: TCM nursing of breast cancer, TCM nursing of breast abscess/mass, TCM nursing of postpartum breast, TCM nursing of acute mastitis. **Conclusion:** the TCM nursing literature in the field of breast disease is increasing rapidly, but the overall quality of the published literature is low, so more scientific and standardized TCM nursing original research is urgently needed.

Keywords: breast; TCM nursing; specialty; data mining; cluster analysis

Background

Breast diseases are common diseases among women, and statistical surveys show that the incidence of various breast diseases in China is increasing year by year [1]. According to the TCM clinical pathways and TCM treatment protocols formulated by the State Administration of Traditional Chinese Medicine [2], breast diseases are all TCM advent-ageous diseases. In order to give full play to the characteristic advantages of TCM nursing diagnosis, the construction work of "specialized TCM nursing clinics" has been started nationwide [3, 4], among them, the Beijing Municipal TCM medical institutions set up breast TCM care clinics [5, 6]. With the development of breast specialist Chinese medicine care clinics, related nursing research is also on the rise. Therefore, this study applies the bibliometric method and co-word clustering method present the hot spots of research related to Chinese medicine care in mammography. Understand the current status of research in the field of Chinese medical care in mammography, detect the frontier of research and future development trends to improve the quality of Chinese medical care in mammography, improve patient prognosis and enhance patients' quality of life.

Materials and Methods

Data source
Using CNKI, Wanfang, VIP and SINOMED databases as data sources and applying subject search. Set Fuzzy Search in Advanced Search: Subject = "Mammary gland" and "Traditional Chinese Medicine" and "Nursing". The search period is from the establishment of the database to May 16, 2021, sourced are all journals and retrieved on May 16, 2021, after importing the data into NoteExpress and eliminating duplicates, conferences, news, and other literature not related to the topic.

Data processing methods
The co-term analysis is derived from the concepts of bibliometric citation coupling and co-citation, and co-term analysis is part of the content analysis method [7]. It is to take the literature as the research object, use the co-occurrence of words or noun phrases in the literature to determine the relationship between the subjects in the discipline represented by the literature set, and then use modern statistical techniques such as cluster analysis, multi-dimensional scale analysis and other multivariate statistical methods to simplify the complex co-word network relationship between many analysis objects into a number of relationships between clusters and visualize them, so

as to summarize the research hotspots of the discipline. First filter the imported literature, and the exclusion criteria: Repeated publication of documents, patents, meeting notices/minutes, call for papers, manuscripts, and notices from various editorial offices, incomplete data in the literature, and no source of literature. Import the duplicate-checked data into the bibliographic co-occurrence analysis system BICOMB 2.01 [8] in NoteExpress format, and extract the author, journal, publication year, keywords and other information. And remove the keywords that have no research significance in the extracted results, such as "Chinese medicine", "Chinese medicine nursing", "Chinese medicine nursing technology", "effect", "result", "breast", etc. Combine keywords with similar or identical meanings in the results, such as "auricular acupuncture point bean burial", "auricular acupuncture point bean pressure", "auricular acupuncture point pressure", "auricular acupuncture point magnetic bead therapy "can be merged into "auricular acupressure" for subsequent keyword statistics and co-word analysis to enhance the readability of the results. The keywords were transformed into a dichotomous word part matrix by BICOMB 2.01 and then imported into SPSS 21.0 for traditional clustering.

Results

Number and distribution of literature
A total of 839 documents were retrieved and duplicated through 4 major Chinese databases. The specific source of the documents is shown in Figure 1. Since the first related article was published in 1982, the number of articles published in 2019 was the largest, with a total of 123 articles. The specific publication trend over time is shown in Figure 2.

Literature published in journals
The 839 articles were distributed in 348 journals, and the 10 journals that published the most relevant literature are shown in Table 1.

Keyword distribution
High-frequency words According to the formula of high-frequency words $N = 1/2(-1 +)$, this study defines the high-frequency words of keywords as 48. Among them, the high-frequency words about breast diseases are shown in Table 2. The most frequently occurring disease is breast cancer, which accounts for 14.73% of all keywords. The high-frequency words commonly used in breast medicine nursing technology are shown in Table 3. Among them, the most frequent words are Chinese medicine emotional nursing, accounting for 3.29% of all high-frequency words.
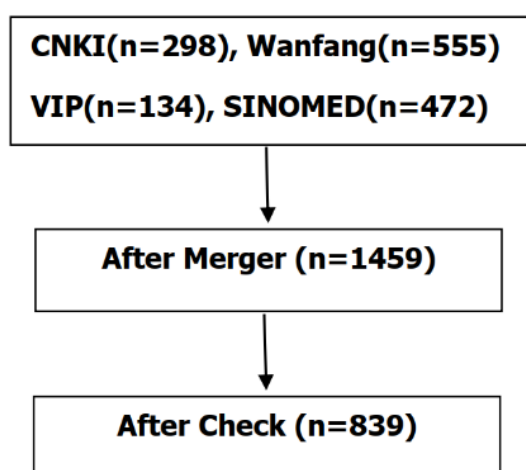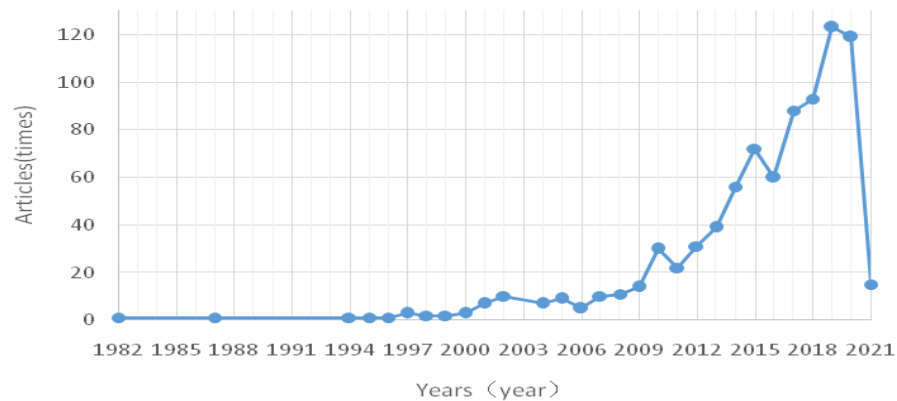

Figure 1 Sources of documents

Figure 2 Time trend of posting

Table 1 Distribution of articles published in journals

Journal name	Frequency of occurrence	Frequency (%)
Journal of New Chinese Medicine*	20	2.54
Inner Mongolia Journal of Traditional Chinese Medicine	17	2.16
Chinese Medicine Modern Distance Education of China*	16	2.03
Guide of China Medicine*	15	1.91
Contemporary Medical Symposium	14	1.78
Electronic Journal of Practical Gynecologic Endocrinology	13	1.65
Health Care Guide	12	1.52
Guangming Chinese Medicine	11	1.40
Special Health	10	1.27
Chinese Journal of Modern Nursing*	10	1.27

* indicates that the journal (was) a core journal

Table 2 High-frequency words in breast disease

High frequency words for breast disease	Frequency of occurrence	Frequency (%)
Breast Cancer	363	14.73
Mammary gland enlargement	84	3.41
Acute mastitis	44	1.79
Mastitis	35	1.42
Postpartum Breast Disease	14	0.57
Plasmacytoid mastitis	14	0.57
Disorders of breast milk production	7	0.28
Advanced Breast Cancer	6	0.24

Table 3 Frequent words of traditional Chinese medicine nursing techniques commonly used in breast department

Chinese Medicine Nursing Technology	Frequency of occurrence	Frequency（%）
Chinese Medicine Emotional Care	81	3.29
Acupressure points	50	2.03
Acupuncture	20	0.81
Ear acupressure	12	0.49
Moxibustion	11	0.45
Tri-Cycle Therapy	10	0.41
Chinese Medicine	9	0.37
Acupressure	9	0.37
Traditional Chinese Medicine External Treatment	8	0.3245
Moxibustion with Ginger	7	0.284
Five Tones Therapy	6	0.2434
Chinese Medicine Health Education	6	0.2434
External application of Chinese medicine	6	0.2434

Discussion

Research hotspots of traditional Chinese medicine nursing of breast diseases
The key word is a high-level summary and condensed content of the core and essence of the article, which has a great reference for the development of the breast specialty of Chinese medicine. The research hotspots of traditional Chinese medicine nursing related to breast diseases by clustering high-frequency keywords through SPSS software are as follows:

Traditional Chinese medicine nursing of breast cancer and related symptoms According to the statistical analysis of high-frequency words, breast cancer is the disease with the largest number of researches related to traditional Chinese medicine nursing of all breast diseases. This is related to breast cancer, which is the most common malignant tumor in women with the highest incidence and fatality rate in the world, and also the most common cancer among Chinese women [9, 10]. At present, comprehensive treatment based on the surgical operation is adopted in clinical practice. Many patients have different degrees of complications and adverse reactions during treatment such as surgery, chemotherapy and post-care [11]. According to the keyword cluster analysis, the common symptoms associated with breast cancer: anxiety and depression, lymphedema, cancer-caused fatigue, adverse emotions and adverse reactions associated with surgery and radiotherapy, gastrointestinal reactions, and sleep disorders, are all hot spots of research in TCM nursing. The above symptoms are also common complications that need to be resolved after breast cancer surgery and chemotherapy. In severe cases, they will greatly damage the physical and mental health of breast cancer patients, and affect their quality of life and survival time. However, the main symptoms in the TCM nursing program are: limb swelling, pain, upset, irritability, nausea, vomiting (during chemotherapy), and numbness of the limbs (during chemotherapy). There is still a certain difference from the actual research hotspots, suggesting that the TCM nursing program can be improved by referring to the existing research.

Traditional Chinese medicine nursing of breast abscess/lump
Plasma cell mastitis and breast hyperplasia are two more common types of non-neoplastic breast diseases. The two have one thing in common, that is, the external treatment of traditional Chinese medicine has a significant effect on the treatment of these two types of diseases. Plasma cell mastitis (PCM) is a chronic non-bacterial purulent breast disease based on mammary duct dilatation and plasma cell infiltration. It is called "acne mastitis" in Chinese medicine [12]. There is a higher chance of abscesses developing and breaking down to form sinus tracts and fistulas, and once the ulcer appears, it is often difficult to heal for a long time. Conventional debridement and dressing methods have a longer treatment period. The commonly used surgical options are negative pressure closed drainage, lesion debridement suture [13], and segmental resection. Although surgical removal of the lesion is complete, the tissue damage is greater and the loss of tissue can result in the destruction of the breast shape. Severe cases require reconstructive surgery for repair, and inflammatory recurrence can have serious implications for reconstructive techniques such as flap transfer [14], so treatment of plasmacytoid mastitis ulcers is a difficult clinical problem. However, the external treatment method of Chinese medicine has many advantages such as direct access to the disease, high concentration of drugs, no digestive tract irritation, and fast results, and has significant advantages in its treatment. Mammary gland hyperplasia is a non-inflammatory, non-cancerous lesion of the breast tissue [15]. However, some studies have shown that in nearly 5% of patients with breast enlargement with breast lumps, puncture pathology results are suggestive of breast cancer [16]. This disease belongs to the category of masturbation in Chinese medicine. Meta-analysis has found that the efficiency and cure rate of external treatment of this disease are better than internal treatment [17], and external treatment can avoid the disadvantages of internal bitterness and increase patient compliance.

Traditional Chinese medicine care of postpartum mammary glands in pregnant women Lack of breast milk, milk stagnation, breast swelling and pain often occur after childbirth [18]. The results of the cluster analysis showed that TCM care techniques such as acupressure, auricular pressure, and acupressure were more widely used in this patient population. The common problems of breastfeeding women contain two main types of diseases: insufficient milk and milk stagnation, which can affect breastfeeding no matter which type of disease occurs. As the public attaches greater importance to breastfeeding, mothers are becoming more cautious about the use of medications during breastfeeding. In this case, the advantages of TCM nursing techniques are evident, with innovative treatment methods and ideas that facilitate breastfeeding and postpartum rehabilitation during lactation, and have a beneficial effect on the recovery of lactating women and the healthy growth of newborns.

Traditional Chinese medicine nursing of acute mastitis With the opening of the domestic fertility policy, the number of breastfeeding women in China is gradually increasing. Successful breastfeeding and safe passage of lactation are very important to the health of mothers and babies [19]. Breast carbuncle (acute mastitis), as a common and frequently-occurring disease in breastfeeding women, not only causes breast redness, swelling, heat, and pain, but also easily stops breastfeeding, and can have serious effects on the physical and mental health of mothers and babies. The incidence of canker sores is about 10.3%, and their onset, if not managed properly, can easily lead to the development of breast abscesses, which require incision and drainage treatment, aggravating the physical damage to the patient. Scientific health management is an important measure to prevent breastfeeding cessation and breast abscesses. Numerous studies have shown that the occurrence of canker sores is closely related to poor lifestyle habits, wrong breastfeeding practices, first delivery, local use of antibacterial drugs, history of canker sores, cracked nipples, and trauma to the breast. The implementation of health management for patients with canker sores, including breastfeeding guidance, guidance on breast care techniques, external application of traditional Chinese medicine, manual breast drainage, auricular pressure, emotional and spiritual care, and dietary guidance, is conducive to improving the rate of continued breastfeeding, reducing the incidence of adverse reactions, the rate of return of breast milk and the recurrence of disease, and improving the quality of life of patients [20, 21].

The overall trend of literature related to breast TCM care is increasing year by year
In this study, we searched the literature on the application of TCM nursing techniques to patients with breast diseases published in CNKI, Wanfang, VIP, and SINOMED databases since the establishment of the database, and found that the overall number of literature was on the rise. The high incidence of breast disease is inextricably linked to food hygiene issues such as food additives in recent years, the habit of staying up late, and the difficulty of relieving stress from family and work. The increase in the number of patients and the increase in public health awareness has made the issue of women's breast health a hot topic of research for medical and health scholars, and as a result, the number of articles published in the field of breast diseases is increasing. Figure 2 shows that the increase in the number of articles has accelerated since 2011, with significant growth between 2011 and 2021. Mainly because the release of the "Outline of China's Nursing Career Development Plan (2011–2015)" [22] in 2011 provided a strong guarantee and support for the development of TCM career and TCM nursing techniques in China, and also promoted the practical application of various TCM nursing techniques in the field of breast disease-related treatment and care. Meanwhile, the number of publications after 2014 showed a rapid increase year by year, indicating that under the promotion of national policies in its first few years, TCM care techniques in the field of breast diseases have started to show good clinical feedback and effective clinical trial results, and more researchers have started to be willing to apply TCM care techniques to patients with breast diseases and to carry out conceptual innovation and technological innovation. In addition, the increase in

the number of publications year by year also indicates that the reserve of TCM nursing talents is increasing and the scientific research and innovation ability of TCM nursing talents is increasing, which can combine theory and practice while actively trying TCM nursing techniques in the clinic, and apply scientific research thinking to technical and theoretical innovation, making the test results more scientific.

The overall quality of publications related to Chinese medical care in mammography needs to be improved

This study showed that 839 articles were distributed in 348 journals, and the top 10 journals carried 16.45% of the articles, although the journals were diverse, only "New Chinese Medicine", "Modern Distance Education in Chinese Traditional Medicine", "Chinese Medicine Guide", and "Chinese Journal of Modern Nursing" (had) were included in the catalog of core Chinese scientific and technical journals. Therefore, although TCM nursing techniques have made some progress in the field of breast diseases, the academic standard of the literature on its research application has not yet been generally recognized by the industry, and the academic influence is still at a low level. It can be seen that the quality of TCM scientific research of nursing staff needs to be improved, and the advantage of clinical characteristics of TCM nursing is closely related to the nursing staff's own TCM and scientific research literacy. At present, although TCM nursing talents have formed a coherent training from secondary school, college, bachelor's degree to master's degree and doctoral degree, due to the unclear positioning of TCM nursing discipline, there is a lack of unified and effective standards and positioning for the training objectives [23, 24], contents and evaluation of TCM nursing talents, which leads to the lack of TCM background and low scientific research quality of clinical nursing talents, thus affecting the effective application of their ability to discriminate care and the effective dissemination of innovative achievements. This affects the effective application of their ability to apply evidence-based care and the effective dissemination of their innovative achievements. At present, although the TCM nursing research methods are gradually being scientificized as seen in the literature, there are still fewer original studies of higher quality in clinical research, making it difficult to form high-quality secondary evidence resources, so improving research development is a key driver for the development of the discipline.

TCM care protocols did not cover all HF breast diseases in the results of the literature analysis

Through high-frequency word statistics, breast diseases in the relevant literature are mainly breast cancer, breast hyperplasia, mastitis, and postpartum breast diseases, which overlap with breast rocks and canker sores mentioned in the Chinese medicine clinical pathways and Chinese medicine treatment protocols (2018 edition) for 95 Chinese medicine advantageous diseases such as wind-warm lung-heat disease (severe pneumonia) developed by the State Administration of Traditional Chinese Medicine.

However, the research hotspot also involved mastopexy, which was not mentioned in the protocol. Mammary gland hyperplasia is one of the most common diseases in breast surgery, with clinical manifestations such as breast pain and breast lumps, which have a serious impact on women's physical and mental health and quality of life [25]. The TCM care protocol was developed based on the TCM dominant disease and did not address mastopathy either. It can be seen that the diseases and symptoms listed in the protocol did not cover the results of the literature analysis and the current state of application of clinical TCM care techniques. The high-frequency words in the results of this study can, to a certain extent, reflect the hotness and clinical demand of the study, so the results can be used as a reference in the improvement of the TCM care protocols for TCM dominant diseases [26].

Conclusion

This study systematically counted the research progress of TCM nursing in the field of breast diseases through the bibliometric method and presented the research trends of TCM nursing in breast, which provided a reference basis for the future construction of breast TCM nursing specialties, TCM nursing innovation and development. Also, the results of this study show the current dilemma in breast TCM nursing research, suggesting that technological innovation and theoretical innovation in TCM nursing are needed if there is to be a breakthrough or development in this field. In fact, many clinical specialist nursing experts are aware of this and have carried out relevant innovative trials in the clinic, but due to the innovators' unstandardized research methods or limited writing skills leading to the ineffective dissemination of their findings, effective techniques are not further disseminated and promoted, and even a large number of breast TCM nursing workers repeat useless attempts, limiting the development of the discipline.

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