Development of Caring as a Human Science: 50 Years of History of the Korean Society of Nursing Science

Kim, Jeung-Im^{1,*} · Suh, Eunyoung E.^{2,*} · Song, Ju-Eun³ · Im, Yeojin⁴ · Park, Jin-Hee³ · Yu, Soyoung⁵ · Jang, Sun Joo⁶ · Kim, Da-Hee²

¹School of Nursing, Soonchunhyang University, Cheonan

²College of Nursing · Research Institute of Nursing Science, Seoul National University, Seoul

³College of Nursing · Research Institute of Nursing Science, Ajou University, Suwon

⁴College of Nursing Science · East-West Nursing Research Institute, Kyung Hee University, Seoul

⁵College of Nursing, CHA University, Pocheon

⁶Red-Cross College of Nursing, Chung-Ang University, Seoul, Korea

Purpose: This year 2020 marks the 50th anniversary of the founding of the Korean Society of Nursing Science (KSNS). This study was aimed to explore development of caring and describe the 50 years of history of KSNS within the sociocultural context of Korea regarding academic footsteps, meanings, and implications for the future. **Methods:** This study used a historical research methodology using a literature review and bibliometric analysis. Relevant literature was reviewed and the published abstracts in the Journal of Korean Academy of Nursing (JKAN) were analyzed using VOSviewer. **Results:** Birth control and family planning in the 1970s was the main research topic. In the 1980s, the development of nursing concepts, theories, and philosophies was the mission of KSNS to extend the disciplinary boundary. In the 1990s, the progress of KSNS to become one of the woman-dominant healthcare professionals was the mission in the given period. Expanding the frontiers of KSNS to the extent of global standards was the undertaking of the nursing scholars in the 2000s. Lastly, in the 2010s, the quality and quantity improvement of KSNS and JKAN is expected to make our future even prosperous. The map visualization of the 50 years of research accumulation showed the comparable opposition of quantitative vs. qualitative research methodologies, equation modeling, and instrument development. **Conclusion:** These clusters of research demonstrates the efforts to make nursing evidence by Korean nursing scholars for the last five decades. The growth in the slope of KSNS and outcomes of JKAN are to carry on to an unimaginable extent in the future.

Key words: Nursing Care; Humans; Societies, Nursing; History of Nursing; Historical Article

INTRODUCTION

This year 2020 marks the 50th anniversary of the founding of the Korean Society of Nursing Science (KSNS), the leading nursing academic society in South Korea, as well as the

WHO-designated 'The Year of Nurses and Midwives.' In 1970, pioneer nursing scholars launched KSNS with the slogan of 'developing nursing science and disseminating research outcomes' [1]. The performance of KSNS over the past 50 years is remarkable compared to any other academic discipline in modern

*These authors contributed equally as first authors.

Address reprint requests to : Song, Ju-Eun

College of Nursing · Research Institute of Nursing Science, Ajou University, 164 Worldcup-ro, Yeongtong-gu, Suwon 16499, Korea

Tel: +82-31-219-7018 Fax: +82-31-219-7020 E-mail: songje@ajou.ac.kr

Address reprint requests to : Im, Yeojin

College of Nursing Science · East-West Nursing Research Institute, Kyung Hee University, 26 Kyungheedaero, Dongdaemun-gu, Seoul 02447, Korea

Tel: +82-2-961-9424 Fax: +82-2-961-9398 E-mail: imyj@khu.ac.kr

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Korean history.

The KSNS holds more than 5,000 active members of nursing scientists and clinical nurses. It has eight affiliated academic sub-societies. It produces two international academic journals, the *Asian Nursing Research* and *Journal of the Korean Academy of Nursing*, which is listed on the Social Science Citation Index. Additionally, four subject-oriented journals: the *Journal of Korean Academy of Community Health Nursing*, *Korean Journal of Adult Nursing*, *Korean Journal of Child Health Nursing* and *Journal of Korean Academy of Fundamentals of Nursing*, are listed in the Scopus Database. It hosts biannual national and international nursing conferences, and seasonal workshops and seminars with the topics of current nursing issues.

The importance of the roles of nurses has also been highlighted by the COVID-19 pandemic this year. Through this COVID-19 pandemic, people around the world were allowed to reconsider the importance of nurses' on-the-spot clinical competence and the quality of the healthcare system in each country. The success of infection control on COVID-19 in South Korea attributes to nurses' clinical expertise as well as flexibility and celerity to risk management in the nursing system.

Nurse's official title and roles in medical institutions in history have grown together with the modernization of medicine and technology. Still, it is not an exaggeration to say that the essence of caring began with the origin of human beings. With the long history of social care, nurses in this 4th industrial revolutionary era are unique and special healthcare providers who provide hands-on-care during the entire life cycle from birth to death in an individual's life as well as family and community.

Nursing scientists make invisible caring intentions and practices visible as a human science. They develop concepts and theories emerging from nursing phenomena. Moreover, they designed experimental studies to prove causal relationships between these nursing concepts and methods. This very dynamic and ever-growing discipline - nursing will lead a healthy future for individuals, families, and communities, with its unique and multi-functional competency as scientists, clinical practitioners, and educators.

The beginning and development of contemporary nursing academia in modernized Korea run along a line with the development of KSNS. Herein, the 50 years of history of KSNS was explored

and described within the socio-cultural context of Korea regarding academic footsteps, meanings, and implications for the future. This analysis represents how Korean society leaves bigger rooms for nursing as a woman-dominant and human-caring discipline over the last 50 years.

METHODS

1. Study design

This study used a historical research methodology using a literature review and bibliometric analysis. The historical research method is the process of critically examining and analyzing records and the imaginative reconstruction of the past from the data derived by this process [2]. Especially in describing history in nursing, it is necessary to attempt interpreting historical events in association with social, cultural, and political contexts within the realm of the healthcare system and to find the historical value and meaning of nursing [3].

2. Research data

The data for this analysis were gathered in three folds. First, for the necessary information regarding Korean societal changes and advances in the healthcare system from the 1970s to the present, a literature review on relevant topics was performed. The articles and book chapters described mutual growth in the healthcare system and nurses' social position in Korea were included. A total of 40 pieces of government documents, articles, and books were collected. Second, the historical publications, conference proceedings, and lists of conference topics by KSNS were obtained and investigated to elicit any possible thematic trends in academic advances throughout KSNS history [4]. Third, the abstracts of published journals on the *Journal of Korean Academy of Nursing (JKAN)*, the primary academic journal of KSNS, for the last 50 years, were retrieved. The number of abstracts reached 3000, and they became the source of text mining analysis by VOSviewer.

3. Procedures

To celebrate the 50th anniversary of KSNS, the editorial board members of JKAN intended to draw a footstep to acknowledge the past achievements and guide the future of nursing academia.

Through a couple of face-to-face meetings, we lay out a tentative direction of this article and started searching for useful resources. Initially, we planned to analyze the keywords of JKAN published articles qualitatively. However, it was neither appropriate nor possible to analyze as many as around three-thousand keywords using a traditional qualitative method.

Further, the VOSviewer was suggested for the text mining of large volumes of data, such as thousands of abstracts. VOSviewer is computer software that provides constructing and viewing bibliometric mapping in an easy-to-interpret manner using the VOS mapping technique by van Eck and Waltman [5,6]. Since its development, it has been successfully used in various disciplines on bibliometric mapping. This software program provides several useful functions related to bibliometric research now [7,8]. In this study, we used the VOS mapping function to create and visualize the frequency, co-occurrence, and distances between each word and others out of the ever published English abstracts of JKAN.

4. Data analysis

1) Historical analysis

Collected resources were reviewed and summarized to determine the societal changes and monumental events that advance women's social position and professions. Upon understanding the social context of each decade; these historical occasions were reexamined for any possible relations to the development of contemporary nursing in Korea and the historical references of KSNS. Through weekly online meetings, we came together with the main characteristics of each decade, and their relations with the footprints of KSNS. The themes of international conferences and the main topics of national conferences of KSNS reflected the characteristics of Korean society and nursing as a profession well decade by decade.

2) VOSviewer analysis

Collected data were analyzed using VOSviewer's function to create a co-occurrence map on terms based on the text data. First, the list of 2,983 articles was modified to the supported file type format for VOSviewer on a 10-year basis. Since the software only provides analyzing functions on text written in English, we excluded 106 articles that only had Korean abstracts or did not have abstracts, and handled 2,877 articles that have English

version abstracts (Table 1).

Terms were extracted in the abstract field using the binary counting method, which only counts the existence of a word in one article as one count. 'Threshold' was set to 10, and terms with 60% highest ranked 'relevance score' calculated by the software's algorithm was selected as 'items.' 'Threshold 10' and 'selecting 60% highest score' were the default choices of the program. We adjusted these two values in various ways other than the default choice. Still, we decided to use this default choice as our criteria because default choice made the most explicit demonstration of the map at all periods.

Constructed maps, including all items following the criteria (10 thresholds, 60% most suitable choice), were presented and each item's occurrences and relevance were demonstrated as a numeric dataset in tables. Further, clusters into which items were grouped were made based on these datasets. After locating maps and these processed datasets, thematic analysis was performed on the clusters that took highly ranked terms in occurrences and relevance into account. Several less-informative or irrelevant terms, such as the research institute and researcher's names, were intentionally excluded.

5. Ethical considerations

IRB approval for this study was exempted due to the characteristics of data collected by the authors' affiliated institution.

RESULTS

The results of this study provided the trends of JKAN research in the sequential development of KSNS with changes in the socio-cultural context of Korea. First, the developmental occasions of KSNS were described within the social context of Korea in the

Table 1. Published Abstracts Out of JKAN for Last 50 Years

Year period	Total article count	Omitted articles	Analyzed articles
1970~1979	179	14	165
1980~1989	201	64	137
1990~1999	589	17	572
2000~2009	1,193	8	1,185
2010~2019	821	3	818
Total (1970~2019)	2,983	106	2,877

given decade. Then, based on the most frequent and highly related items elicited from the abstracts' analysis, the encompassing theme was suggested to represent the characteristics of the decade. The results of the text mining analysis are illustrated in a map for each decade.

1. The 1970s: Period of establishing Nursing Academic Society and main domestic journal

1) Social changes and nursing development in 1970s

In the 1970s, the ratio of labor force participation rate of women was 38.5%, meaning that only four tenth women had a job, and nurses were one of the primary tasks for women working in a professional field [9]. The revision of the Mother and Child Health Law in 1973 called out the necessity of improving women's higher education in the 70s. In nursing, the official nurse licensure issued by the Minister of Health and Social Affairs began to provide nurse license to graduates of nursing college and post-graduate level schools in 1973 with the revision of Medical Law. The first doctorate program in nursing was opened at Yonsei University in 1978, followed by Ewha Womans University in 1979, which indicated the advancement of nursing academia [10].

Based on the impending necessity for a nursing academic society representing the body of nursing scholars in Korea, the Korean Academy of Nursing (KAN), the former body of KSNS was launched in April 1970. The goals of KAN were to improve the research competences of nursing scholars and to communicate with international nursing academic societies as a representative of the Korean nursing academic society. As the first academic journal of KAN, the Journal of Nurses Academic Society (JNAS) was published in December 1970, which is the former name of JKAN. The JNAS issued two volumes each year until 1984, and then the issues per year increased to 3 times. The themes of conferences mainly focused on identifying nursing as a science and profession, learning research methodology, and importing Western nursing education and research systems (Appendix 1). In the 1970s, the KAN was born under societal and internal needs for an academic nursing society, and the KAN began its educational activities through JNAS.

2) Attributes of published studies in 1970s

In the 1970s, a total of 179 articles were published. The top-30 frequently used words in terms of their occurrence and relevance are listed (Appendix 2). In particular, the top-ranked words were grouped as clusters based on each word's relation to the others. Through a deliberate semantic analysis of top-ranked words, word clusters, and substantive meanings of the words in nursing research, four clusters were named in the 1970s. The 1st cluster was about 'women's reproductive health,' including terms such as pregnancy, rate, infant, baby, and woman. The 2nd cluster was about developing 'nursing science and knowledge,' including words such as knowledge, research, development, nursing, and science. The 3rd cluster was on 'nursing education,' including the terms, for instance, student, educational level, understanding, and clinical experience. The 4th cluster was again related to 'family planning,' containing child, female, family planning, and home.

The 1st and 4th clusters of 'women's reproductive health' and 'family planning' are considered to reflect the fact that the national health policy underlining family planning and birth control in the 1970s influenced nursing research. The 2nd and 3rd clusters of developing 'nursing knowledge as a science' and 'nursing education,' were the results of the demands for professional nursing and education with higher quality in those days. The word map of the 1970s illustrated those four features, but the clusters were somewhat scattered than prominent (Figure 1).

In the 1970s, as the 1st nursing academic society in Korea, KAN was established, and the foundation for the production of nursing research and publications was grounded. Pioneering nursing leaders who founded KAN were the same group of people who originated at the graduate level of nursing education in Korea. JNAS was initiated as the face of KAN, presenting the fact that caring could become scientific. JNAS rigorously attempted to develop nursing science and indigenous knowledge in Korea by publishing as diverse and scientific as possible to become a platform for nursing research in the 1970s. In summary, the formation and activities of KAN and JNAS in the 1970s were schematized with the theme of the '*Period of Establishing Nursing Academic Society and Main Domestic Journal*.'

In the 1980s, women's employment rate continued to increase, reaching 41.6%, and the employment ratio of female college graduates to males increased to 16.4%. Women aged 25~34

In nursing education, three more universities established doc-

toral programs, including Seoul National University in 1984, Kyungpook National University in 1985, and the Catholic University in Korea in 1988 [10]. As an activity of the Korean Academy of Nursing, regular general meetings and academic conferences were held every year in the 1980s, and the spring and fall conferences were held twice a year from 1985. Additionally, various types of educational activities, such as seasonal workshops and seminars, were actively hosted by not only KAN but also by subdivision nursing societies. The International Nursing Conference (INC) was held in 1984 and second in 1989.

Since the theme, “the 1980s is the year of nursing theory development,” was entitled at the KAN conference in 1980, nursing concepts, theories, and philosophies undergird in nursing were actively discussed in many nursing conferences. Nursing theorists such as Newman in 1987, Rogers in 1988, and Meleis in 1989, to name a few, were introduced to Korean nursing scholars, and their applications were discussed. The yearly issues of JNAS increased from 2 to 3 in 1985, and JNAS was listed on the nursing index in 1988 (Appendix 1) [4].

2) Attributes of published studies in 1980s

In the 1980s, a total of 201 papers were published in JNAS. The 1st cluster that came out of text mining was ‘the objects of nursing research,’ such as a person, activity, attitude, disease, treatment, and problem, which mostly fell into the four nursing meta-paradigm (i.e., human, health, environment, and nursing). During this period, ‘the diverse category of study participants,’ including woman, nursing student, stress, religion, age, and family was named as the 2nd cluster. A group of words like hypothesis, experimental and control group, effect, and sample, etc., was clustered together as 3rd one, entitled, ‘composing an experimental study.’ As the 4th cluster, the words, for example, scale, instrument, development, reliability, and process, were grouped as ‘developing reliable instruments’ (Appendix 2).

As school of nursing with a Ph.D. program increased in 1980s, nursing scholars from those schools tried to establish a philosophical foundation for nursing discipline and to identify the discriminant knowledge of nursing. The 1st and 2nd clusters reflected those efforts to define the boundaries of nursing knowledge; in results, nursing researchers discoursed on four nursing meta-paradigms (i.e., human, health, environment, and nursing).

Studies using experimental or survey design and reliable instruments were dominant in the 1980s, which emerged as 3rd and 4th clusters as well as depicted in text maps. The words were still scattered but eminent enough to represent the four clusters (Figure 2). In summary, the phase of the fast-developing period of the 1980s, by developing the nursing discipline and its theories, was named as ‘*Period of Growth by Consolidating Philosophical and Theoretical Foundation.*’

3. The 1990s: Period of taking a leap toward scientific and professional discipline

1) Social changes and nursing development in 1990s

The participation rate of women in economic activities increased to 47.0% in 1998. The employment rate in their 20s and 40s increased; however, their career was cut off by childbirth and parenting in their 30s, showing a distinctive M-shaped pattern [10]. As women’s employment issues related to gender characteristics emerged, various efforts to prevent gender discrimination in employment and to ensure gender equality, including the Basic Act on Women’s Development in 1995, the goal for female employment rate in 1996, and the Gender Discrimination Act in 1999.

Regarding nursing education, the number of 4-year colleges of nursing increased from 19 in 1990 to 49 in 1999, demonstrating quality education across the nation. However, the number of three-year colleges (57.5%) surpassed those of 4-year colleges (42.5%) in 1999. To unify the nursing educational system, the so-called ‘RN to BSN’ program, which provides RNs with bachelor degrees after two years of course work, was established in 1996. For quality control of higher education, the Korean Council for University Education began the evaluation and accreditation of college education in 1994 [12].

Regarding the academic activities of KAN, various educational activities, including regular general meetings, academic presentations, and annual conferences, were established in the 1990s. In the results of many efforts to hold international nursing conferences more regularly, six international nursing conferences were held in the 1990s. The conference themes in the 1990s were related to nursing professionalism to become scientific in structure and methods. To address a few, ‘scientific approaches to achieve nursing professionalism’ in 1992, ‘nursing profession-

alism and nursing education' in 1993, and 'nursing education for nursing professionalism' in 1995 were exemplars.

Another trend shown in the 1990s was the emphasis on research methodology to be more rigorous investigating invisible nursing phenomena. Along the line, attention to qualitative methodology increased. In the results, a couple of conferences took the types of qualitative methods as their main topics, such grounded theory methodology and ethnography in 1991 (Appendix 1). The number of articles had published in JNAS reached almost 600 by the end of 1999. The name of the journal was changed to the Journal of Academy of Nursing in 1995. In 1997, the name changed again to the Journal of the Korean Academy of Nursing (JKAN) as it is currently. From 1997 to now, only one volume in 1998 had a different journal name (i.e., the Korean Academy of Nursing Journal) from JKAN. In the 1990s, it seemed that there were a lot of considerations about journal names. JKAN was listed on the candidate journals of the Korea Citation Index in 1999. Furthermore, the English edition of JKAN was issued for the first time in 1999. Since then, it has been released once a year.

2) Attributes of published studies in 1990s

In 1990, a total of 589 articles was published, demonstrating an excessive productivity growth of almost three times that of the previous decade. The text-mining results showed four clusters about the research methods and their objects. The 1st distinct cluster was the introduction of 'qualitative research methodology,' which included words such as experience, meaning, category, theme, and perspective. The 2nd cluster was characterized by the 'specified quantitative research,' composing the phrase such as t-test, ANOVA, Sheffe test, multiple regression, and significant difference. 'Nursing education and practice' were the 3rd clusters, which became the entities of nursing research, including words such as nursing practice, clinical practice, curriculum, and system. Finally, the 'use of bio-data' was identified as the 4th cluster, including blood pressure, body weight, significant change, effect, test, and exercise (Appendix 2).

The gradual growth of survey studies was followed by more sophisticated and inventive research designs using correlations or t-test, Sheffe test as a post-hoc test, utilizing bio-data, and investigating nursing education and practice. As a counterpart of

quantitative research methodology, the introduction of qualitative ones was welcomed by nursing scholars in those days, given the fact that many aspects of nursing phenomena heavily relied on invisible relations and existence.

In those days, nursing scholars seemed to struggle to make nursing as a professional discipline by expanding the realm of research methodology and by exploring more refined research methods. These efforts are implied in the 4 clusters mentioned above and the text map. It was evident that the published studies in JKAN were grouped into either qualitative (colored in red) or quantitative (colored in green) realms (Figure 3). In summary, the 1990s, the period characterized by dramatic growth and diverged research methods, was named as '*Period of Taking a Leap toward Scientific and Professional Discipline.*'

4. 2000's: Period of becoming a global nursing society and an influential journal

1) Social changes and nursing development in 2000s

The Ministry of Gender Equality was established in 2001, the Bisexual Equal Employment Objective System in 2003, the Act on the Promotion of Family-Friendly Social Environment, and the Career Interruption Women Act in June 2008, which were expected to promote women's economic activities [13]. However, it has been pointed out that the low percentage of women in high-ranking positions, the gender wage gap, and women's career disconnection problems caused by pregnancy, childbirth, and childcare remain social issues [13].

Concerning nursing education, 32 master's programs, and 15 doctoral programs were established as of 2001 [14]. In the field of healthcare, the medical institution assessment system was intensified to accreditation systems, forcing medical institutions to improve patient safety and the level of healthcare quality [15]. For nursing quality education, the Korean Accreditation Board of Nursing Education (KABONE) was established in 2003 and authorized by the Ministry of Health and Welfare in 2004 [16]. The 1st accreditation for an undergraduate program and 1st approval of a master's program for advanced practice nursing occurred in 2005 [16].

The name 'Korean Academy of Nursing' of the organization was changed to the 'Korean Society of Nursing Science' in 2005 and joined as a member of the 'World Academy of Nursing Sci-

2) Attributes of published studies in 2000s

A total of 1,193 articles was published in the 2000s, almost doubled compared to the previous decade. In particular, six times more than those in the 1970s. More than thousands of abstracts illustrated three relatively prominent clusters and one less noticeable cluster through a text mining analysis as well as in a text map. The 1st cluster was about ‘refined qualitative research,’ showing that the methods got more advanced and detailed, including the words such as concept, Strauss, Corbin, Q statement, Colaizzi, core category, and theory (Figure 4).

The 2nd cluster was on research investigating ‘causal relationships between variables,’ including words such as multiple regression, hypothetical model, structural model, path, and efficacy. Conducting ‘intervention studies using bio-data,’ the 3rd cluster, emerged including words such as height, body weight, BMI, total cholesterol, diastolic blood pressure, and heart rate. The last 4th cluster, developing a ‘valid and reliable instrument,’ was represented by words such as validity, reliability, preliminary item, item analysis, and Cronbach alpha (Appendix 2). The world map of this period depicted four clusters in colors that showed the accumulated body of nursing knowledge in the 2000s (Figure 4).

The nursing scholars in the 2000s flourished nursing academia by publishing the most substantial volume of articles in JKAN ever and investigating deeper and broader dimensions of target phenomena in terms of the research methodology, target population, and analysis technique. In the 2000s, the KSNS became a

member of the World Academy of Nursing. In the same period, JKAN was listed on SSCI/SCIE together. Given these exceptional outcomes in Korean nursing history, the 2000s are named as ‘Period of Becoming a Global Nursing Society and an Influential Journal.’

5. The 2010s: Period of Expansion and sophistication on research method and analysis

1) Social changes and nursing development in 2010s

The ratio of labor force participation in the field of healthcare was 21.4% among the rate of women labor force 49.4% in 2010, which meant that almost half of working women belonged to the field of healthcare. The ratio of women leaders in high-position jobs has continuously increased from 17.5% in 2005 to 22.8% in 2014. With the societal issues of aging and chronic disease, policies such as the efficient distribution of healthcare resources, expansion of public healthcare facilities, quality healthcare, specialization of medical services, and increasing hospice services were suggested [17,18].

The implementation of the 2nd round accreditation on nursing education programs by the KABONE was performed. There was a numeric expansion of school of nursing in a short period in lieu of the shortage of nurses in healthcare. A total of 22 doctoral programs and 33 master’s programs took the role of providing education to graduate nursing students in 2010 (Appendix 1).

The themes of nursing education, humanity oriented nursing

Figure 5. 2010s' map visualization by their occurrence and relevance.

environment, utilization of translational research, and discipline of convergence were discussed in the KSNS conferences. Moreover, academic discussions on vulnerable populations, including the elderly, children with illness, women with multicultural backgrounds, and patient safety were held. Reflecting on the features of the 4th industrial revolution in the healthcare system, the utilization of big data, healthcare systems and policies, and inter-professional practices were also deliberated in conferences. JKAN became an open-access journal in 2013, publishing both Korean and English articles and providing the full-text JATS XML in 2014, and utilizing the online submission and management system in 2017 (Appendix 1).

2) Attributes of published studies in 2010s

In the 2010s, a total of 821 articles was published in JKAN, with approximately a 30% decrease in the number compared to the previous decade. The reason for the reduction was estimated because of the foundation of the Asian Nursing Research (ANR), the English version journal of KSNS, in 2007, and its SSCI/SCI(E) listing in 2010. It is assumed that the research products of Korean nursing scholars were split in both JKAN and ANR in the 2010s. Nonetheless, with better research quality in terms of methodology and analysis technique, the articles in the 2010s were grouped into four similar but more compound clusters compared to the 2000s.

‘More sophisticated quantitative research’ was the 1st cluster, including words such as pretest-posttest design, significant difference, and nonequivalent control group. This result demonstrated that the methodology was broadened and solidified. Besides, ‘research on the causal relationship and prediction’ emerged as the 2nd cluster, showing the advances in research types. Words such as AMOS, hypothetical modeling, and model fit belonged to the given cluster. ‘Proliferation of qualitative studies,’ the 3rd cluster, composed a group of words, such as in-depth interviews, processes, contexts, meanings, and core categories. It validated the increased number of qualitative studies and the expansion in the depth of the methodology. The last cluster was about ‘the development of robust instruments,’ including words such as total scale, factor loading, confirmatory factor analysis, and criterion. Specified nursing scales appropriate to Koreans were developed in the studies of the given cluster (Appendix 2).

In the 2010s, the studies became more sophisticated in methodology and broadened in target phenomena. The word map in the decade illustrated four prominent colors representing each cluster, which proved the fact that each study contributed to making nursing evidence (Figure 5). Considering the feature of each cluster with diversity and advancement, the 2010s is named as ‘*Period of Expansion and Sophistication on Research Method and Analysis*.’

DISCUSSION: A SUMMARY OF THE 50 YEARS

Since its establishment as the 1st nursing academic society in Korea in 1970, KSNS has been grown histrionically in its quality outcomes. From its origin by a few nursing scholars, it is now grown to be the most significant academic nursing society with more than five thousand members. INC is held every other year, and seasonal workshops and national conferences are hosted regularly. In particular, INC has become a renowned international gathering of nursing scholars from many Asian countries.

To summarize each decade, birth control and family planning, as one of the characteristics of developing countries, as well as social issues in the 1970s, was the main research topic. In the 1980s, the development of nursing concepts, theories, and philosophies was the mission of KSNS to extend the disciplinary boundary. In the 1990s, the progress of KSNS to become one of the woman-dominant healthcare professionals was the mission in the given period. Expanding the frontiers of KSNS to the extent of global standards was the undertaking of the nursing scholars in the 2000s. Lastly, in the 2010s, the quality and quantity improvement of KSNS and JKAN is expected to make our future even prosperous.

The accumulation of 50 years of research portrayed a distinctive picture of the footprints of our ancestors (Figure 6). The most significant cluster came out of text mining analysis was about ‘words related to quantitative research,’ which was comparative to ‘the words of qualitative research’ in the 2nd cluster. The ‘effect’ was the most frequently used word in the 1st cluster; meanwhile, ‘experience’ was the most used word in the 2nd cluster. The 3rd cluster was about ‘equation modeling,’ which was represented by ‘model’ as the most used word. The validity was the word designating the 4th cluster, ‘development of a quality

Figure 6. The map visualization for 50 years by their occurrence and relevance.

instrument.'

The quadrilateral shape of the map provided insights into three ways. The first insight is that the 50 years of JKAN outcomes could be segregated in four different research areas. Second, the types of methodology used in JKAN research are quantitative, as many as three-fourths of the total outcomes. The last insight is about the incommensurability between logical positivism and constructivism. The distance between 1st, 3rd, 4th clusters to each other, which are named as 'quantitative research,' 'equation modeling,' and 'instrument development' respectively, is closer than the distance from 1st, 3rd, and 4th to 2nd cluster, 'qualitative research.' In summary, through this quadrilateral shape of research accumulation, the advances in nursing science and divergence of research realms were explained.

CONCLUSION

In this article, the history of KSNs and JKAN were reviewed within the socio-cultural context of Korea, and the published articles were analyzed using text mining techniques. The map of the 50 years of research accumulation showed the comparable opposition of quantitative vs. qualitative research methodologies, equation modeling, and instrument development. These clusters

of research demonstrates the efforts to make caring as a human science by Korean nursing scholars for the last five decades. The growth in the slope of KSNs and outcomes of JKAN are to carry on to an unimaginable extent in the future.

CONFLICTS OF INTEREST

The authors declared no conflict of interest.

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AUTHOR CONTRIBUTIONS

Conceptualization or/and Methodology: All authors.

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Resources or/and Software: Song JE & Kim DH.

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Writing original draft or/and Review & editing: All authors.

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Appendix 1. Sociocultural Changes, Korean Society of Nursing Science, and Journal of Korean Academy of Nursing

연대	1970년대	1980년대	1990년대	2000년대	2010년대
여성의 사회적, 경제적 위상 변화 (Changes in women's social positions)	<ul style="list-style-type: none"> ■ 여성의 경제활동참가율(1970년) - 38.5% 	<ul style="list-style-type: none"> ■ 여성의 경제활동참가율(1980년) - 41.6% ■ 남성대비 여성의 대졸 취업자(1980)-16.4% 	<ul style="list-style-type: none"> ■ 여성의 경제활동참가율(1998년) - 47.0% ■ M자형 여성의 경제 활동 참가 유형(20대 취업을 증가, 30대 경력단절, 40대 재취업) 	<ul style="list-style-type: none"> ■ 여성의 경제활동참가율(2000년) - 48.8% ■ 남성대비 여성의 대졸 취업자(2002) - 51.2% ■ M자형이 점차 완만해 지고 있음 ■ L자형 곡선(대졸 이상의 고학력 여성은 20대 취업을 증가, 결혼 이후 재취업X) 	<ul style="list-style-type: none"> ■ 여성의 경제활동참가율(2010년)- 49.4% ■ 산업별 분포(2013년) - 보건/복지가 21.4%, 64만명으로 남성근로자 3.7배 ■ 여성 전문·관리직의 비율도 2005년 17.5%에서 2014년 22.8%로 증가
	<ul style="list-style-type: none"> ■ 1973년 모자보건법 제정, 여성은행위 결혼각사제 폐지 ■ 1975년 여성 교육 질적 향상을 위한 인간화 교육의 필요성 주장 ■ 1976년 직업훈련기본법 제정(여성직업훈련 기회) ■ 1977년 대학에 최초의 여성학 강좌 개설 	<ul style="list-style-type: none"> ■ 1988년 세무대학, 경찰대학 등에 첫 여학생이 입학 ■ 1987년 남녀고용평등법 제정 ■ 1989년 남녀고용평등법 제2차 개정에서 여성 우대의 법적 기반이 마련됨 ■ 1997년 대학에 최초의 여성학 강좌 개설 	<ul style="list-style-type: none"> ■ 1995년 여성발전기본법 채택 ■ 1996년 여성채용목표제 도입과 확대 시행 ■ 1999년 남녀차별금지 및 구제에 관한 법률 제정 ■ 1998년 국내 여성 첫 총경 ■ 1999년 교사의 성차별적 내용 삭제 	<ul style="list-style-type: none"> ■ 2001년 여성부 출범 ■ 2003년 양성평등채용 목표제, 여성 첫 법무장관, 여성 첫 헌법재판관 ■ 2004년 여성 첫 대법관 ■ 2005년 양성평등 교육진흥원 설치 ■ 2006년 여성 첫 국무총리 ■ 2007년 가족친화 사회환경조성 촉진법 ■ 2008년 경력단절 여성의 경제활동촉진법 	<ul style="list-style-type: none"> ■ 2010년 18대 여성국회의원 14.7% (16대의 2배 이상), 기초의회 여성비례대표 93.4%, 광역의원 여성 비례대표 71.6%, 최초의 여성 교육감 탄생. ■ 2012년 아이 돌봄 지원법 ■ 2014년 여성 인재 데이터 베이스 운영, 양성평등기본법
간호직, 간호사, 간호 교육의 발전 역사*[History of nurses and nursing education]	<ul style="list-style-type: none"> ■ 1977년 말 3년제 전문학사 과정이 38개교의 전문대학으로 개교. ■ 1978년 연세대학교에 첫 간호학 박사교육과정 개설 ■ 1970년대의 박사 교육 목표 - 창의적으로 간호이론을 개발하고, 특수 전문분야에 적절한 이론을 적용하며, 교수능력을 갖춘 간호지도자 육성 	<ul style="list-style-type: none"> ■ 1970년대의 박사 교육목표와 동일 ■ 1982년 제1회 박사학위 졸업생 1명 배출 ■ 1984년 국립대학 최초 서울대학교에 간호학 박사과정 설립 ■ 1985년 지방 국립대학 최초 간호학 박사과정 설립 ■ 1981년 간호협회에서 4년제 일원화를 위해 정책 간담회를 제안하고 1989년 간호교육 특별위원회 구성, 1990년 정기대의원 총회에서 간호교육제도 일원화에 대한 건의문 채택 	<ul style="list-style-type: none"> ■ 1990년대의 박사 교육목표 - 간호학지로서의 체계적, 독립적이고 참신하며 유연성 있는 사고능력을 갖고 연구 활동에 적극 참여하며 간호의 고유한 지식체 개발에 공헌하며 인류 건강에 기여함. ■ 1996년 RN-BSN 과정 개설 ■ 4년제 교육기관은 1990년 19개 교에서 1999년도 48개교로 증가 ■ 1999년 3년제 전문대학은 65개교(57.5%), 4년제 학사학위과정 학교 수는 78개교(42.5%) ■ 1997년 대학교육협의회 대학평가 실시 	<ul style="list-style-type: none"> ■ 2000년대의 박사 교육목표 - 간호과학자와 간호전문가 양성 및 간호 지식체 탐구와 개발 및 확장 ■ 2000년 기초간호교육과정은 전문 대학과정과 학사학위 과정으로 나뉨 ■ 계속 교육 과정 제도로는 RN-BSN, 방송대학 학사 과정, 독학사 학위 과정 제공. ■ 2001년 대학원 과정으로 임상전문 대학원 개설 ■ 2006년 학점은행제 도입 ■ 2000년 의료법상 '분야별 간호사' 항목이 '전문간호사'로 개정됨 ■ 2006년 전문간호사 자격인정 등에 관한 규칙 제정(13개 분야) 	<ul style="list-style-type: none"> ■ 2010년 총 22개교에서 박사학위과정이 개설되어 있으며, 박사학위논문의 수가 급격히 증가하고 있음. ■ 국내 33개교의 대학원 석사교육과정에 전문간호사 교육과정이 개설되는 변화가 있었음.

Appendix 1. Continued

연대	1970년대	1980년대	1990년대	2000년대	2010년대
간호 학회지의 발전 역사 (History of the Journal of Korean Academy of Nursing)	<ul style="list-style-type: none">■ 1973년 의료법 개정: 간호원 면허는 간호학 전공하는 대학, 전문학교, 간호학교를 졸업한 자, 보건사회부장관이 인정하는 외국의 학교를 졸업하거나 간호원 면허를 받은 자로 면허시험에 합격한 자에게 부여■ 1975년 간호원 면허증 갱신이 이루어짐■ 1970년 명칭- 간호전문학교■ 1979년 명칭 - 간호전문대학	<ul style="list-style-type: none">■ 1987년 의료법 개정을 통하여 '간호원'에서 '간호사'로 명칭 변경■ 1988년 '간호사 면허증'이 첫 발급	<ul style="list-style-type: none">■ 1995년 학회지 영문명이 The Journal of Academy of Nursing으로 변경■ 1997년 학회지 발간 부수를 1500부로 늘림■ 1997년 12 월 학회지의 국문표기를 대한간호학회지로, 영문표기를 Journal of Korean Academy of Nursing으로 변경■ 1998년 3월 영문표기를 Korean Academy of Nursing Journal 로 개칭■ 1998년 6월 영문표기를 Journal of Korean Academy of Nursing으로 다시 변경■ 1999년 학술진흥재단 등재후보학술지에 등재■ 1999년 제29권 5호부터 영문판 발행시작(연1회)	<ul style="list-style-type: none">■ 2004년 간호협회에서 재단법인 한국 간호 평가를 독립 법인체로 설립함■ 2004년 의료기관평가제도 - 종합병원 이상을 대상으로 한 강제평가 방식■ 2009년 의료법 개정안(의료기관인증제 도입) 통과 - 의료기관 인증전담기관이 평가	<ul style="list-style-type: none">■ 2010년 의료기관 인증제 실행
		<ul style="list-style-type: none">■ 1982년 ISSN 등록(pISSN:0378-004X)■ 1985년 간호학회지를 연 3회 발간■ 1988년 Nursing index에 간호학회지 등록■ 1989년 학회지 발간 부수를 900부로 늘림	<ul style="list-style-type: none">■ 1995년 학회지 영문명이 The Journal of Academy of Nursing으로 변경■ 1997년 학회지 발간 부수를 1500부로 늘림■ 1997년 12 월 학회지의 국문표기를 대한간호학회지로, 영문표기를 Journal of Korean Academy of Nursing으로 변경■ 1998년 3월 영문표기를 Korean Academy of Nursing Journal 로 개칭■ 1998년 6월 영문표기를 Journal of Korean Academy of Nursing으로 다시 변경■ 1999년 학술진흥재단 등재후보학술지에 등재■ 1999년 제29권 5호부터 영문판 발행시작(연1회)	<ul style="list-style-type: none">■ 2000년 ISSN 변경(pISSN:1598-2874)■ 2001년 대한간호학회지가 한국학술진흥재단 등재학술지에 등재■ 2003년 제33권 제4호부터 영문판 연 2회로 증간■ 2004년 홈페이지에 학회지 논문검색과 원문정보 제공, 제34권 제1 호부터 대한간호학회지 SCOPUS 등재■ 2004년 MEDLINE에 대한간호학회지 등재 확정■ 2006년 온라인 논문 투고 시스템 시작■ 2008년 제38권 제1호부터 SCIE 및 SSCI 등재	<ul style="list-style-type: none">■ 2013년 제43권 제6호부터 CC-BY-ND(저작자표시-변경금지)를 적용하는 open access 변경■ 2014년 학회지 투고 규정 변경 - 참고문헌 NLM 스타일로 변경 발간■ 2014년 국 · 영문 논문 동시 접수■ 2016년 과거 출판된 JKAN 논문의 Full Text JATS XML 작업 완료■ 2017년 영문 온라인 논문 투고 시스템 시작■ 2017년 KAMIE Press에서 지원하는 학회지 홈페이지/모바일 웹 오픈

Appendix 1. Continued

연대	1970년대	1980년대	1990년대	2000년대	2010년대
간호 학회의 발전 역사(History of the Korean Society of Nursing Science)	<ul style="list-style-type: none"> 1970년 대한간호협회 제38회 정기총회에서 학회 결성. 대한 간호협회 신화단체로 발족 1970년 9월 29일 한국과학기술단체 총연합회 등록 1970년 10월 제1회 학술대회 개최 1970년 12월 학회지 발간 1971년 5개 분과학회 발기총회(간호행정, 내외과 간호학, 산소아과 간호학, 보건의료학, 정신간호학) 1974년 대한간호협회에서 독립 1975년 평생회원제도 실시 1976년 분과학회 명칭 변경(보건의료학→지역사회 간호학) 1979년 간호학 자습서 편집위원 위촉(33명), 분과학회 명칭 변경(내외과→성인간호학, 산소아과→모자간호학, 간호교육 및 행정→간호행정) 	<ul style="list-style-type: none"> 1980년~1989년 매해 정기총회와 학술발표회 개최 1980년 정기총회 대의원 총회에서 회원총회로 회칙 개정 1981년 제10회 정기총회에서 심사위원회- 법제위원회로 개정 1984년 미국 Sigma Theta Tau 와 제1차 국제학술대회 개최, 1986년 간호원 국가 고시문제 수정작업(141명) 1987년 문교부로부터 우수학회로 선정됨 1989년 제18회 정기총회 중장기 발전계획안 작성 	<ul style="list-style-type: none"> 1990년~1999년 매해 정기총회와 학술대회 개최 1991년 Dr. Juliet Corbin 초청 학술대회 1995년 창립 25주년 기념대회 및 국제학술대회, 간호학대사전 발행 1999년 제1차 아태 간호연맹 창립총회 기념 학술대회 	<ul style="list-style-type: none"> 2000년~2009년 매해 정기총회와 학술대회 개최 2001년 대한간호학회 홈페이지 개설, 대한간호학회 30년사 발간 2003년 사단법인 대한 간호학회창립총회 개최, 대한간호학회 로고 개정 2005년 한국간호과학회로 학회명칭 변경, 과학기술부 산하 사단법인 설립 2000년 창립 30주년 기념식 및 학술대회 2006년 한국간호과학회 윤리헌장, 학술연구윤리 규정 제정 2009년 The 1st World Academy of Nursing Science 창설, World Academy of Nursing Science 가입 	<ul style="list-style-type: none"> 2010년~2019년 매해 정기총회와 학술대회 개최 2년마다 International Nursing Conference 개최 2010년 한국간호과학 학회 창립 40주년, 나이팅게일 서거 100주년 기념 학술대회
학술대회 주제(The title of the conferences)	<ul style="list-style-type: none"> 1973.5.10. 한국교육의 혁신방안 1974.5.28. 과학기술의 발전과 간호 1975.6.3. 여성과 연구 1976.6.4. 산업인의 보건관리 1977.4.28. 신체검진기술에 관한 워크숍 1978.4.22.~23. 응용연구방법 워크숍 1978.7.12. 미국 간호교육과 연구의 동향 1978.12.8.~9. 간호연구 논문의 평가를 위한 워크숍 1979.11.9. 기본간호학 교육의 최근 동향 	<ul style="list-style-type: none"> 1980.2.29. 1980년대는 간호이론 정립의 해 1980.4.22. 간호이론정립전망 1980.11.4. 정신간호원의 역할과 기능 1980.6.19. 가족건강간호의 이론적 근거 1980.7.21. 집단역동 1980.8.5. 지역사회 간호사업의 질적 개선방법 1980.9.30. 간호교육의 전망 1980.11.5. 슬픔과 상실 1980.11.13. 간호연구의 자료 전산처리 이용방법 1981.4.28. 간호과학의 철학적 접근 	<ul style="list-style-type: none"> 1990.4.27. 간호연구모형 1990.6.14~15. 취약가족 간호사정, 중재 및 연구 1990.12.06. 간호의 행위론적 접근 1991.4.26. 간호연구 설계상의 문제 1991.6.13. 첨단과학기술사회와 간호전문화 1991.7.10.~11. 근거이론의 이해 및 간호적용 1991.12.12. 간호의 민속학적 접근 1992.4.28. 간호전문화를 위한 과학적 접근 1992.9.27. 간호전문화와 생명윤리 1992.12.10. 간호전문화를 위한 전략 	<ul style="list-style-type: none"> 2000.5.19. 간호와 정보화 사회 2000.10.20. 간호학의 현황과 전망 - 한국간호의 쟁점 2000.01.25 New Thinking For New Millenium 2001.01.17 연구활동 분류의 최근 동향 2001.04.27 연구활동 분류 체계 2001.11.29~30. Elderly Health and Nursing 2002.05.10 간호의 전문화 방향 2002.11.22. 간호연구의 발전방향 -연구비 수혜 전략 2003.04.25 취약계층을 위한 간호전략 	<ul style="list-style-type: none"> 2010.10.22. 한국간호연구의 새로운 조망 2011. 10. 27~28 Nursing Education: New Paradigm for Global Environment 2012.10.26. 간호학의 새로운 패러다임: 융합학문으로서의 발전방향 모색 2013.10.16~18. Care for Vulnerable Populations: Global Perspectives 2014.10.24. 건강관련 빅데이터 활용 및 간호연구 적용 전략 2015.10.22~23. The Future of Nursing Making a Great Leap Forward Better Human Care

Appendix 1. Continued

연대	1970년대	1980년대	1990년대	2000년대	2010년대
	<ul style="list-style-type: none"> ■ 1981.7.16. 보건진료원 교육의 실제 ■ 1981.10.26. 간호연구 방법상의 문제점 ■ 1982.3.4. 사회학적 연구 접근과 간호 ■ 1984.4.30. An overview of biomedical ethics-1984 ■ 1984.7.12~14. Clinical scholarship: Academic exchange between Eastern and Western Nursing Society ■ 1984.12.18. 간호학에서의 가족개념 ■ 1985.3.13. 청소년을 위한 간호학적 접근 ■ 1985.12.12.~13 간호의 개념들 ■ 1986.3.7. 간호이론의 교육과정 적용 ■ 1986.10.31. 인과 이론의 역사적 변천 및 적용 ■ 1986.11.28~29. 미국 간호진단 분류의 타당성 ■ 1987.5.13. 현상학의 이해 ■ 1987.6.26~27. Betty Newman Health Care Model Application to Nursing Education and Practice 	<ul style="list-style-type: none"> ■ 1981.7.16. 보건진료원 교육의 실제 ■ 1981.10.26. 간호연구 방법상의 문제점 ■ 1982.3.4. 사회학적 연구 접근과 간호 ■ 1984.4.30. An overview of biomedical ethics-1984 ■ 1984.7.12~14. Clinical scholarship: Academic exchange between Eastern and Western Nursing Society ■ 1984.12.18. 간호학에서의 가족개념 ■ 1985.3.13. 청소년을 위한 간호학적 접근 ■ 1985.12.12.~13 간호의 개념들 ■ 1986.3.7. 간호이론의 교육과정 적용 ■ 1986.10.31. 인과 이론의 역사적 변천 및 적용 ■ 1986.11.28~29. 미국 간호진단 분류의 타당성 ■ 1987.5.13. 현상학의 이해 ■ 1987.6.26~27. Betty Newman Health Care Model Application to Nursing Education and Practice 	<ul style="list-style-type: none"> ■ 1993.4.20. 간호전문화와 교육 패러다임 ■ 1993.9.9~10. Health Promotion: Recapturing the Concept for a New Era ■ 1993.12.16. 간호전문화를 위한 교육전략 ■ 1994.4.22. 간호교육 개혁 ■ 1994.7.8. "Critical thinking"에 대한 워크숍 ■ 1994.11.4. 대학원 간호교육의 현황과 문제 ■ 1995.4.20. 간호전문화를 위한 간호교육 ■ 1995.8.8~10. The Newman Systems Model Internaional Conference ■ 1995.11.2. 전문간호사의 교육 및 역할확립을 위한 포럼 ■ 1995.12.12. 간호교육 교과과정 개편 및 비판적 사고 ■ 1996.5.3. 간호영역 확장을 위한 정책방향 ■ 1996.6.13~14. Advancing Clinical Practice through Research ■ 1997.5.2. 미래사회와 caring 	<ul style="list-style-type: none"> ■ 2003.11.20~21. Integration of Complementary and Alternative Therapies into Nursing ■ 2004.01.16. 북한 보건의료의 현황 ■ 2004.05.21. Evidence Based Nursing의 활용: 교육 연구 실무 ■ 2004.11.01~02. Evidence-Based Nursing for the Excellency of Nursing ■ 2005.10.19~21. Healthier Life with Nursing Leadership ■ 2006.07.06~08. 기초와 응용이 만날 때 -기초연구가 응용연구로 확산되는 접합점의 모색 ■ 2006.08.29~30. 간호학 박사교육과 전문간호사 교육의 의 질 관리 전략 ■ 2006.11.09 간호중재를 적용한 연구의 발전전략 ■ 2007.01.15 ■ 간호연구윤리(연구윤리 세미나) ■ 2007.06.18~20. 학문 탐구의 지속가능성 모색 ■ 2007.11.06~08. Building a Network through Nursing Research ■ 2008.10.29 한국의 간호이론-현 주소와 방향 	<ul style="list-style-type: none"> ■ 2016.10.19. 중개연구의 간호학 적용 ■ 2018.01.11~12. Diversity and Universality of Nursing Care and Leadership ■ 2018.10.21. 사람 중심 간호환경: 우리의 토대를 안전하고 건강하게 ■ 2019.10.24~25. Nursing Impact "We Care!"

Appendix 1, Continued

연대	1970년대	1980년대	1990년대	2000년대	2010년대
		<ul style="list-style-type: none"> ■ 1987.11.14. 간호현장에서 의사결정 이론의 적용 ■ 1987.11.27~28. 통증과 불안 ■ 1988.5.6. 간호의 철학적 접근 ■ 1988.7.8. 보건교육 과목 개설을 위한 워크숍 개최 ■ 1988.10.11~12. Martha E. Rogers 이론과 적용 ■ 1988.12.20. 위기중재 ■ 1989.4.27. 동양철학과 건강 ■ 1989.6.5. Post-ICN Symposium: Theoretical Nursing (Afaf. I. Meleis) ■ 1989.11.22. 중, 고등학교에 건강교육과목 개설을 위한 전략 심포지움 개최 ■ 1989.12.7~8. 건강개념에 관한 학문학적 접근 	<ul style="list-style-type: none"> ■ 1997.12.10~11. Interdisciplinary approach: concept and theory, application to nursing practice ■ 1998.4.24. 한국적 간호중재 개발 1 - Korean Nursing Intervention-Alternative Therapy ■ 1998.12.10. 한국적 간호중재 2 - 대체요법 ■ 1999.2.8. 21세기 간호의 조망 ■ 1999.6.4. 다학제적 접근으로 본 여성건강 ■ 1999.12.9~10. 아시아-태평양 간호발전증진-만성질환과 간호 	<ul style="list-style-type: none"> ■ 2009.10.29~30. Exploring New Horizon of Nursing Evidences 	

Appendix 2. The Results of Text Mining Analysis by VOSviewer

1970~1979			1980~1989		
Rank	Item (Occurrence)	Item (Relevance)	Rank	Item (Occurrence)	Item (Relevance)
1	rate (44)	knowledge (3.8588)	1	scale (40)	experimental group (4.7722)
2	student (41)	frequency (2.8013)	2	effect (35)	control group (4.5908)
3	woman (41)	baby (2.2847)	3	problem (28)	state anxiety (3.6277)
4	case (32)	doctor (2.0898)	4	hypothesis (26)	survey (1.9033)
5	effect (27)	variable (2.0336)	5	instrument (25)	effect (1.805)
6	response (27)	interest (1.9584)	6	activity (24)	self (1.7845)
7	professor (27)	community (1.8555)	7	person (23)	case (1.7714)
8	knowledge (26)	reason (1.673)	8	anxiety (21)	hypothesis (1.3893)
9	child (25)	mother (1.5983)	9	health (20)	health (1.3741)
10	research (25)	correlation (1.4922)	10	process (20)	sample (1.3058)
11	correlation (24)	effect (1.4251)	11	development (20)	anxiety (1.1332)
12	hypothesis (21)	student (1.416)	12	family (20)	researcher (1.0572)
13	characteristic (21)	researcher (1.4023)	13	student (19)	process (0.7947)
14	development (21)	investigator (1.3812)	14	researcher (18)	perception (0.7801)
15	understanding (21)	control group (1.2997)	15	Korea (18)	knowledge (0.7695)
16	mother (20)	comparison (1.2577)	16	use (18)	treatment (0.7655)
17	society (20)	parent (1.2391)	17	change (18)	woman (0.7323)
18	influence (20)	hypothesis (1.239)	18	control group (17)	reliability (0.6781)
19	medicine (19)	home (1.1806)	19	case (17)	home (0.643)
20	doctor (18)	nursing education (1.1606)	20	sample (17)	Korea (0.6377)
21	reason (18)	characteristic (1.1124)	21	disease (17)	ANOVA (0.5956)
22	improvement (18)	nursing student (0.9485)	22	attitude (17)	disease (0.5889)
23	tendency (18)	woman (0.9333)	23	experimental group (16)	nursing student (0.568)
24	ability (18)	improvement (0.9165)	24	treatment (16)	attitude (0.5608)
25	delivery (18)	content (0.909)	25	woman (16)	development (0.5599)
26	duration (18)	responsibility (0.9076)	26	relation (16)	change (0.5522)
27	concept (18)	medicine (0.8645)	27	information (16)	research (0.5352)
28	nursing student (17)	case (0.8448)	28	perception (15)	relation (0.4939)
29	t test (17)	t test (0.841)	29	ANOVA (15)	scale (0.4925)
30	profession (17)	hospitalization (0.8041)	30	survey (14)	stress (0.483)

Appendix 2. Continued

1990~1999			2000~2009		
Rank	Item (Occurrence)	Item (Relevance)	Rank	Item (Occurrence)	Item (Relevance)
1	effect (178)	love (3.642)	1	effect (412)	structural model (3.711)
2	score (148)	philosophy (3.3734)	2	control group (248)	preliminary item (3.4184)
3	scale (137)	human being (3.3391)	3	experimental group (210)	Strauss (3.2564)
4	significant difference (124)	Van Kaam (3.1427)	4	significant difference (184)	item analysis (3.079)
5	test (117)	diastolic blood pressure (3.1096)	5	experience (161)	Cronbachs alpha (3.0345)
6	experience (116)	theme (2.836)	6	t test (136)	path (3.0198)
7	t test (107)	health locus (2.7761)	7	process (125)	q statement (2.9908)
8	variable (102)	stress management (2.7248)	8	descriptive statistic (120)	hypothetical model (2.9818)
9	ANOVA (100)	principle (2.6523)	9	exercise (114)	empirical data (2.9578)
10	process (95)	mind (2.5471)	10	instrument (113)	Corbin (2.942)
11	concept (88)	perspective (2.5132)	11	efficacy (111)	Lisrel (2.7896)
12	instrument (86)	meaning (2.479)	12	variance (94)	conceptual framework (2.7521)
13	system (85)	suffering (2.4104)	13	system (92)	content validity (2.7397)
14	correlation (78)	depth interview (2.3715)	14	interview (91)	core category (2.7138)
15	mother (70)	experiment (2.2439)	15	concept (89)	aromatherapy (2.6755)
16	control group (69)	blood pressure (2.1423)	16	tool (79)	indirect effect (2.6202)
17	knowledge (69)	consequence (2.1113)	17	theory (73)	fit (2.5991)
18	meaning (63)	Pearson (2.106)	18	therapy (73)	diastolic blood pressure (2.5657)
19	theory (61)	session (2.0726)	19	multiple regression (72)	theory method (2.52)
20	category (59)	research question (2.0588)	20	social support (71)	total variance (2.5031)
21	experimental group (55)	description (2.0264)	21	approach (69)	direct effect (2.4611)
22	rate (55)	Scheffe test (1.9628)	22	correlation (69)	subjectivity (2.4562)
23	role (54)	multiple regression (1.9429)	23	validity (68)	triglyceride (2.4538)
24	content (52)	definition (1.8969)	24	role (67)	antecedent (2.4416)
25	practice (51)	body weight (1.8432)	25	general hospital (63)	Colaizzi (2.4261)
26	methodology (49)	phenomenon (1.7878)	26	research design (63)	significant influencing factor (2.4234)
27	exercise (48)	significant correlation (1.7794)	27	esteem (61)	q methodology (2.3047)
28	reliability (48)	control group (1.7746)	28	function (61)	total cholesterol (2.2963)
29	feeling (46)	harmony (1.7368)	29	reliability (61)	body composition (2.2736)
30	validity (46)	Pearson correlation (1.723)	30	pearson correlation coefficient (58)	massage (2.2685)

Appendix 2. Continued

2010~2019			1970~2019		
Rank	Item (Occurrence)	Item (Relevance)	Rank	Item (Occurrence)	Item (Relevance)
1	effect (299)	Corbins (2.6727)	1	effect (918)	myofibrillar protein content (6.1634)
2	control group (207)	Strauss (2.4565)	2	control group (553)	plantaris (5.9925)
3	experimental group (188)	total scale (2.374)	3	experimental group (482)	gastrocnemius (5.8504)
4	scale (141)	core category (2.2625)	4	experience (412)	soleus (5.55)
5	experience (109)	test retest reliability (2.2583)	5	model (371)	muscle atrophy (5.4269)
6	significant difference (107)	factor loading (2.2504)	6	process (317)	muscle weight (5.4146)
7	statistic (92)	confirmatory factor analysis (2.1946)	7	concept (235)	treadmill (4.2076)
8	validity (87)	Cronbachs alpha (2.1733)	8	self efficacy (221)	normal distribution (3.8946)
9	variance (76)	criterion (2.1646)	9	exercise (219)	q statement (3.6796)
10	process (74)	criterion validity (2.1515)	10	descriptive statistic (218)	muscle (3.6193)
11	reliability (74)	internal consistency reliability (2.1005)	11	variance (213)	quanl pc program (3.5408)
12	session (71)	internal consistency (2.08)	12	validity (211)	exploratory (3.2046)
13	difference (70)	direct effect (2.0755)	13	reliability (197)	confirmatory factor analysis (3.1656)
14	t test (69)	subscale (2.0661)	14	SPSS (195)	Cronbachs alpha coefficient (3.0195)
15	AMOS (68)	item analysis (2.0582)	15	social support (166)	construct validity (2.9706)
16	rate (68)	exogenous variable (2.0257)	16	collection (162)	Cronbachs alpha (2.9265)
17	correlation (66)	significant direct effect (1.9891)	17	meaning (157)	internal consistency reliability (2.8564)
18	instrument (63)	endogenous variable (1.9853)	18	understanding (145)	q methodology (2.8466)
19	interview (62)	nonequivalent control group pretest posttest design (1.9673)	19	Pearson correlation coefficient (132)	Corbins (2.7813)
20	depth interview (58)	Corbins (2.6727)	20	depth interview (127)	exercise group (2.7549)
21	tool (58)	Strauss (2.4565)	21	self esteem (126)	convergent validity (2.7029)
22	social support (57)	total scale (2.374)	22	factor analysis (121)	test retest reliability (2.6991)
23	risk (54)	core category (2.2625)	23	literature review (119)	serum lipid (2.6429)
24	effectiveness (52)	test retest reliability (2.2583)	24	research design (111)	total scale (2.623)
25	exercise (44)	factor loading (2.2504)	25	multiple regression (107)	criterion validity (2.6052)
26	literature review (44)	confirmatory factor analysis (2.1946)	26	nursing science (106)	food intake (2.5709)
27	risk factor (42)	Cronbachs alpha (2.1733)	27	structure (105)	exploratory factor analysis (2.5647)
28	Korean version (41)	criterion (2.1646)	28	adolescent (104)	psychometric testing (2.5636)
29	hypothetical model (40)	criterion validity (2.1515)	29	feeling (101)	factor structure (2.5153)
30	internal consistency (39)	internal consistency reliability (2.1005)	30	body (99)	concurrent validity (2.503)