Nurse Education Today (2005) **25**, 197–203

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Nurse Education Today

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Nursing education in Slovenia and its impact on nurses publishing in their professional journal

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Accepted 5 January 2005

KEYWORDS
Nursing education;
Periodicals;
Bibliometrics;
Slovenia

Summary The paper describes development of nursing education in Slovenia (from Associate Degree to Diploma level, with BSN programme of brief duration) and discusses its impact on structure and contents of the Journal of the Slovenian Nursing Association (JSNA). Extensive bibliometric analysis was performed on all scientific and technical papers published in the JSNA between 1976 and 2001. Statistical analyses were carried out to study characteristics and inter-relations of authorship, article type, cited references and subject classification. A positive impact of improved and extended education of nurses on quantity and quality of their publications was confirmed. Nevertheless, further steps in terms of education and research are needed fully to establish nursing as an independent profession in Slovenia, and there is still much room for improving the standard of the articles in the JSNA.

Introduction

Nursing education and the nursing profession

Several researchers have studied image and self-concept of nurses. Kalisch and Kalisch (1988) studied nurse image in the media and found it to be subordinate to doctors (MDs) or receded into the background of events. In Slovenia, Pahor (1988, 1989) found that the role of nurse in the

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0260-6917/$ - see front matter
doi:10.1016/j.nedt.2005.01.005

health-care system is marginal compared to the MD, which blocks nurses' potential, impedes communication and causes conflicts. She argues that in our country, a gap has opened up over the last decades between nurses' education and their work, since higher education extends capabilities more than work experience. Nurses with a diploma or university degree demonstrated better competence than their less educated colleagues, even though the latter had more work experience on average. Higher education also correlated with better conceptualisation ability, emotional stability, positive self-concept, positive expectations, independence and reflective thinking, as well as willingness to help and ability to influence and train co-workers. Focusing on the MD—nurse relationship, she argues that there is a long history of MDs' dominance and nurses' subordination based on class and gender discrimination.

Witt (1992) investigated the influence of nursing education on nurses' self-concept and found university level study to encourage better self-image, autonomy, higher self-esteem and more respect for others. Similarly, a study comparing BA (4-year) and AD (Associate Degree — 2-year) nursing students in Ljubljana (Dornik, 1997) confirmed higher average self-esteem in the BA group. The sample consisted of 118 students in Health Education (HE — BA level) or Nursing (AD level) in the academic year 1996/1997, which represented 50.4% of the total enrolled population. Compared to their Nursing peers, the HE programme students were more optimistic regarding their future and their ability to introduce improvements into the health-care system, while they pictured themselves more easily as leaders. The HE students defined professional success mainly as research and teaching at university level while Nursing students aspired to team leadership in hospital setting, which speaks in favour of positive effects of university level education on nurses' self-concept.

Recently, Long and Johnson (2002) examined all the issues of Nurse Education Today between January 1996 and July 2001 and subsequently analysed the 193 articles they considered to represent some form of research. They were primarily interested in the type of research paradigm used, particularly in terms of data collection, sampling and data analysis, but they also addressed the issues of authors' country of origin, editorial policy and multidisciplinarity, everything in relation to the aims and scope of the journal. Three of their conclusions are of particular importance for our research in the sense of starting points, namely that: (i) the nursing profession is still gaining competence and confidence in research; (ii) educational efforts should be evaluated in the light of practice and (iii) more international perspective should be incorporated into the research in nursing education.

Nursing education in Slovenia

Currently, there are three institutions of higher education offering nursing courses in Slovenia: one in the capital city of Ljubljana, one in Maribor, the second largest city, and another in Izola. All nursing programs within these institutions conform to European standards.

Nursing education in Ljubljana

College-level education of nurses begun in 1951 with a 3-year programme at the Nursing School in Ljubljana, which became the Nursing College in 1954. Subsequently, the curriculum has often been modified because of the changes in legislation and the developments in nursing. In 1993, the school was transformed into the University College of Health Care, which is a member of the University of Ljubljana. Presently, the school has seven Departments: of Nursing, Nursing in Gynaecology and Obstetrics, Physiotherapy, Occupational Therapy, Orthopaedic Technology, Sanitary Engineering and Radiology (Visoka, 2000).

In 1996, the last generation of AD programme students was enrolled, while the Diploma in Nursing programme (3-year) started in 1997. Between 1980 and 2003, 2.589 Associate Degrees and 936 Diplomas were awarded.

The notion that nurses in Slovenia should have access to university level education in their profession dates back to the sixties. The Bachelor level programme in Health Education was developed in co-operation with the Faculty of Education in Ljubljana as a 2-year supplement to the AD study. With this programme, Slovenia joined the large family of European countries with BSN programmes. The curriculum was based on four inter-related fields: theory and practice of nursing, health education, research in nursing, and health-care organisation and management. The first students were enrolled in the academic year 1993/1994, all part-time, while the last enrolment year, with only full-time students, was 1995/1996. A total of 129 students were enrolled (Dornik, 2002).

Nursing education in Maribor

In 1993, the College of Health Care was established in Maribor, which was transformed into the University College of Health Care in 1995, whereby the entire curriculum of the older Ljubljana school was adopted. In addition to teaching, the staff

are involved in professional activities, professional development and consulting (Vodnik, 2002). The Nursing study lasts for six semesters, offering full-time as well as part-time option. Since the AD programme was abandoned, the graduates receive the Diploma in Nursing academic title.

The primary ambition of the school is to grow into a faculty of nursing or public health. To achieve it, graduate level courses are developed in co-operation with the Ljubljana school (Mičetić-Turk, 1999). Between 1996 and 2003, 230 AD and 752 Diploma degrees in nursing were awarded in Maribor.

Nursing education in Izola

The Diploma programme in Health Care started in Izola in the academic year 2002/2003. Presently, there are 73 first-year and 48 second-year full-time students.

Materials and methods

The study is based on bibliometric analyses, so no ethical approval was needed. Statistical analyses were performed with the SPSS® for Windows® 10.1 package, while Microsoft® Excel 2002 was used for data management and simple charting.

The scope of our analysis was the only professional journal in the field of nursing in Slovenia, the Journal of the Slovenian Nursing Association (JSNA). All issues published from 1976 to 2001 were examined, whereby only the contributions published in the Articles section were analysed. An average of 9.5 articles were analysed per issue, with average length of 6.5 pages per article. The analysed material totalled to 26 volumes, 88 issues, 843 articles and 5540 pages. Data were gathered on:

- Authors (number, gender, undergraduate and graduate education, academic title),
- Article type (original research, technical, review),
- Cited references (number and type) and
- Subject (MESH keywords, content classification code).

We wanted to find out whether the changes in nursing education in Slovenia have been reflected in the publications (co)authored by nurses. More specifically, we investigated the structure of undergraduate education of all the authors in the JSNA and graduate education of the nurses. We also investigated the trend in the number and average age of cited references over time, as well as the share of journal articles and non-Slovenian publications among the references. Descriptive statistics were followed by basic inference where applicable.

Results and discussion

The articles were written by 1030 authors, 68% of them female. This is in accordance with the fact that nursing is a feminine profession in Slovenia. Ninety-seven percent of authors were from Slovenia and only 3% from abroad, which indicates that there is little international co-operation. Eighty-four percent of the articles were written by a single author, 11.9% by two authors and only 2.8% of articles had three authors. The maximum number of authors was five.

Author structure is depicted in Fig. 1. A little less then one quarter (22.9%) of the authors were listed without a title indicating their undergraduate education. From the nursing profession there were the 26.8% of authors with AD in Nursing and the 15.7% of nurses with a Bachelor degree, whereby 5.5% of authors had AD in Nursing and subsequently graduated from the Faculty of Organisational Sciences (which is a member of the University of Maribor) and 5.6% of authors held the BA degree in Health Care. Nineteen percent of authors were from the medical profession (MDs, many of them psychiatrists, or dentists).

Among the 286 authors with listed graduate-level title, 180 (63%) held a PhD and 11 of those were from abroad; among the 69 (24%) authors holding a MSc/MA, only seven were from abroad, hence foreign authors do not markedly heighten the educational level. An indication of the fact that nursing is still establishing itself as a profession in Slovenia is the small number of nurses with graduate education among the authors: there were only 28 in total, while only two of them have obtained a doctoral degree. Academic appointment title was listed by 221 authors and in 46.8% of the cases it was of the highest rank (Professor, Senior Researcher or Research Councillor). Only 16 nurses with graduate education possessed an academic appointment title.

Overall, 400 (47.4%) articles were (co-)authored by nurses with at least AD education. There was statistically significant difference between 2-year periods in the proportion of articles with at least one nurse among authors (χ^2 test: $p < 0.001$): a general increasing trend can be observed over time (Fig. 2).

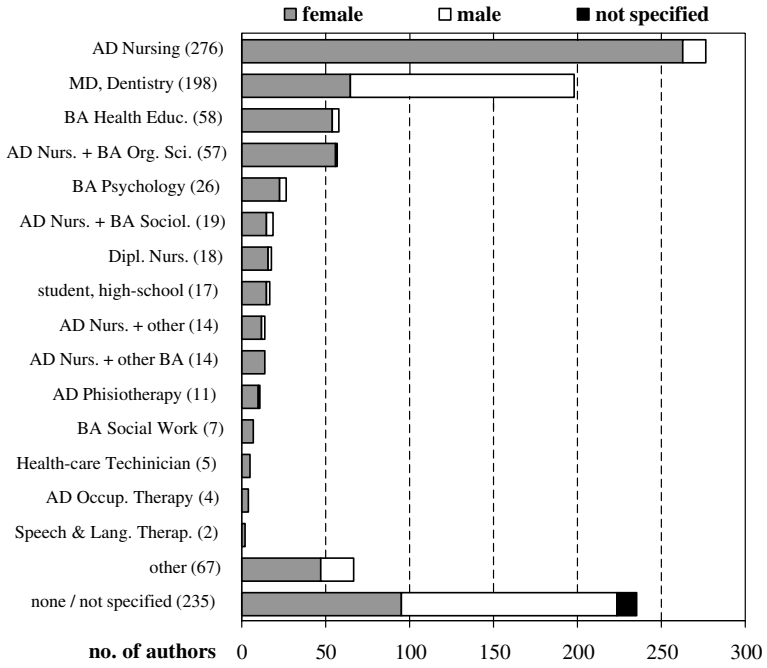

Figure 1 Undergraduate education of the authors (total number in parentheses).

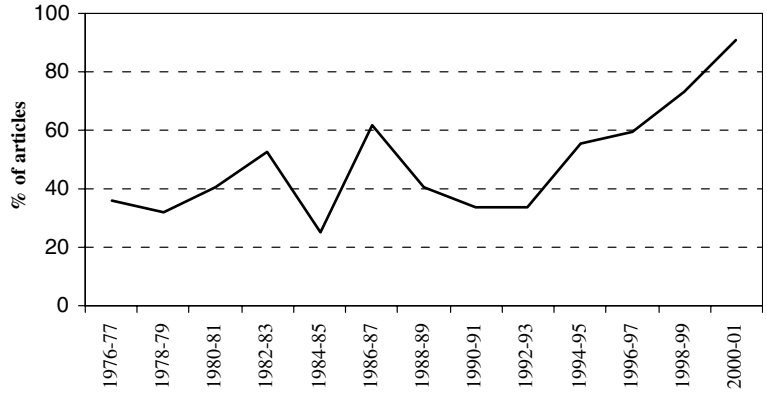

Figure 2 Percentage of articles in 2-year period with at least one nurse among authors.

Overall structure of article type is the following: technical (''professional'') articles 75%; research (''scientific'') articles 14%; review articles 3%; other articles 8%. Evidently, it is appropriate for the JSNA to declare itself as a professional journal. Nevertheless, we found that the percentage of technical articles has been gradually decreasing over the last 10 years, while research articles have been slowly increasing their share.

Of the 843 analysed articles, 625 listed references (6449 publications in total). The 2-year periods differed significantly in the total number of cited references (Kruskal-Wallis test: $p < 0.001$). The distributions are summarised with box-plots (depicting 1st and 9th decile, 1st and 3rd quartile and median) in Fig. 3. The rise in the number of cited references in the recent years can be at least partly attributed to the increased publishing by nurses with university-level degree. The average age of cited references was 6.9 years. Contrary to our expectations, no significant differences were found between time-periods regarding reference age (Kruskal-Wallis test: $p = 0.409$).

We were also interested in the article-level share of journal articles in the cited references. The results of this analysis are presented in Table 1, whereby the total number of cited monographs and journal articles in the article was chosen as the most appropriate base. On average, journal articles account for 37.8% of cited monographs

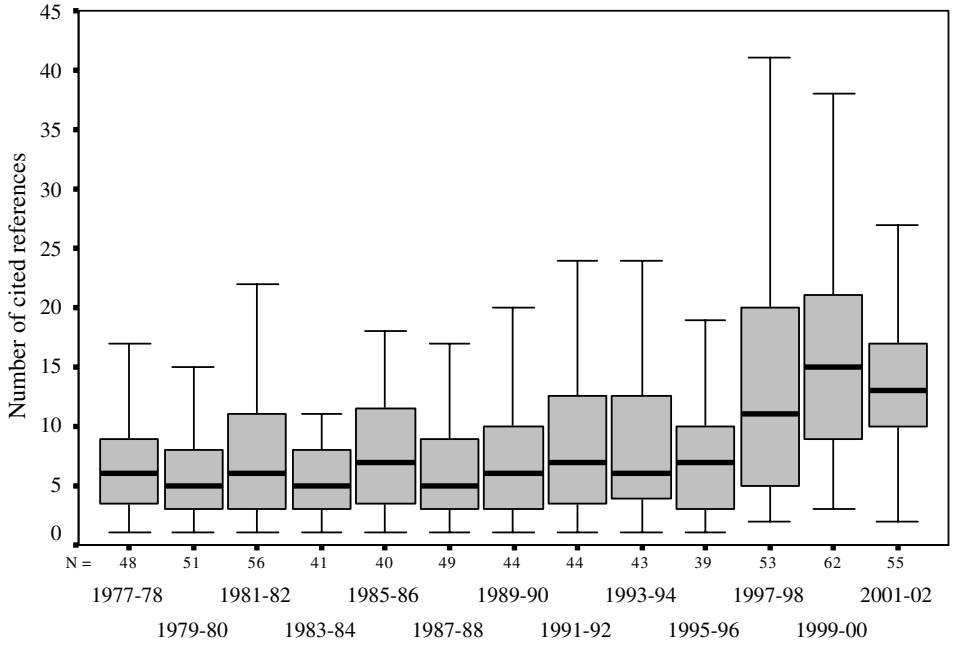

Figure 3 Number of cited references in 2-year period (*N* = number of articles in the period).

Table 1 Cited journal articles among the total cited journal articles and monographs within article

Share	No. of articles	%
0%	174	28.5
Less than 50%	199	32.6
50% or more	190	31.2
100%	47	7.7

and journal articles. We also found the abovementioned percentage of cited journal articles to significantly differ between 2-year periods (Kruskal-Wallis test: $p < 0.001$), but no clear trend could be observed.

We expected that the increasing share of nurses with university degree among the authors and the growing number of cited references would lead to an increased proportion of cited foreign journal articles, but this was unfortunately not the case.

Next, article type was cross-tabulated against author education. Almost one third (30.8%) of the research articles (following the IMRaD scheme) were contributed by nurses with a Bachelor degree. Among the selected health-care professionals, MDs were the most frequent authors of review articles, while nurses with AD contributed the largest share (29.2%) of technical articles.

Regarding subject, the first analysis was based on our own content classification system, which was applied to each article manually. Table 2 presents the data on the 74 (out of the total 119) research articles (co-)authored by at least one nurse. When examining changes over 2-year periods, we found that nurses are increasingly involved in research in their own field, and that health-problem prevention is becoming a key aspect of the nursing research. This can be attributed to the increasing number of nurses with university

Table 2 Content classification of research articles (co-)authored by nurses

Content classification	No. of articles	%
Nursing practice	14	18.9
Health promotion, health education, prevention, healthy nutrition	14	18.9
Sociology, psychology, social work	8	10.8
Nursing education, curricula, nursing students, nursing high-school	7	9.5
Nursing profession, role and identity of nurses	7	9.5
Nursing theory (paradigms and models, diagnoses, standards)	5	6.8
Nursing management (policies and trends, organisational aspects)	4	5.4
Medicine, dentistry, psychiatry, pharmacology, ergonomics	4	5.4
Other	11	14.9
Total	74	100.0

education, and in particular to the group of BSN nurses, since health education topics match the share of nursing practice.

We also analysed all the keywords assigned to the articles by the editorial staff of the JSNA. The list comprised 585 different Slovenian keywords (total number 1.044) and 562 different English keywords (total number 1.034). English keywords were excluded from further analysis, since they are usually simply translations of Slovenian keywords and often of questionable appropriateness. When attempting to compare frequency distributions over time, the major problem was the change in terminology, so the automated analysis gave a biased and blurred picture of the prevailing keyword groups. Hence, we manually extracted the keywords most closely related to the field of nursing and tried to unify them (e.g., ''patient care'' was classified under the term ''nursing''). The result was a list of 166 Slovenian keywords, which is less than a third of the original list. These keywords were further grouped into five clusters (centred on nursing practice, nurses, health education, the patient, and nursing education), which roughly correspond to the different aspects of nursing covered by our pre-defined classification (see Table 2).

Two national bibliographic databases are of primary importance for the field of nursing in Slovenia: Biomedicina Slovenica (BS; www.mf.uni-lj.si/ibmi-english/info-viri/index.html) and COBISS (Co-operative Online Bibliographic System and Services—Virtual Library of Slovenia; www.cobiss.si/cobiss_eng.html). There is no room here to even briefly sketch the scope and basic characteristics of the two, so we refer the interested readers to the respective websites for further information. As far as subject classification is concerned, since there is no dedicated thesaurus for the field of nursing in Slovenia, Medical Subject Headings (MeSH; www.nlm.nih.gov/mesh/meshhome.html) is used within the BS, while either the Subject Heading List of the National and University Library of Slovenia or freely chosen keywords are used within COBISS. It is our belief that the developing nursing profession in Slovenia would greatly benefit from its own thesaurus, which could be a translation and adaptation of the CINAHL thesaurus.

Conclusion

An extensive bibliometric analysis was performed on all the scientific and technical papers published in the Journal of the Slovenian Nursing Association between 1976 and 2001. We demonstrated that higher educational level of nurses leads to their more frequent publishing in the journal under investigation. One of the reasons for this is that any university-level study provides them with at least basic training in scientific and technical writing.

The number of foreign authors is small, so the editorial board should strive for more international co-operation. At the same time, it is reasonable to expect that noteworthy results arising from Slovenian researchers in the field of nursing working together with their colleagues from abroad achieve publication in internationally renowned journals, rather than in the JSNA.

An increasing trend in the number of cited references per article over time was confirmed, but the average age of cited references was not found to differ significantly between 2-year periods. Furthermore, the increasing share of nurses with university degree among the authors, together with the growth in the number of cited references, did not bring about a rise in the percentage of cited foreign-language journal articles.

When analysing article type, we found that almost one third of the research articles were contributed by nurses with a Bachelor degree. Among the health professionals, MDs were the most frequent authors of review articles, while AD-level nurses contributed the largest percentage of technical articles.

Subject classification structure varies notably over 2-year periods and indicates that nurses are increasingly involved in research in their field. A significant role in this process can be attributed to nurses with university-level degree, since in addition to nursing practice, health education topics prevail among the research articles (co) authored by nurses.

In conclusion, it should be stressed that nurses in Slovenia are still struggling for the right to study for a university degree in their own field. Research is the basis of any profession, and dissemination of new findings and existing knowledge in the field of nursing should be encouraged as the basis for further development of theory and practice of nursing.

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