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Review

Research literature production on nursing competences from 1981 till 2012: A bibliometric snapshot

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SUMMARY

Background: When nurse education has moved away from a hospital based apprenticeship to a higher education institutions and new EU legislature enabled nurse workforce mobility, the term "competence" became an important concept in nurse education and practice. However, there is still a lot of confusion about its definition, how it should be assessed and implemented and which competences does a contemporary nurse need.
Objectives: To find publishing patterns in the nursing competence research literature production, focusing on publishing dynamics, identifying prolific research entities, most cited papers, and visualising the content of the research.
Design and Data Sources: A bibliometric analysis of 370 information sources (288 original papers and 82 review articles) found in the Scopus database using the search string "nursing competenc*" for the period 1981–2012 was conducted. The SciMago database was used to identify country and source title ranks.
Methods: Common elements of bibliometric data were extracted from each information source. Descriptive, correspondence and text analyses were used on the retrieved bibliometric data.
Results: The production of research literature has a positive trend. The research on nursing competences is being performed on all five continents, however is not yet published in top journals. Most prolific countries are the United States of America, the United Kingdom and Australasia, and most prolific source titles are the Journal of clinical nursing, the Journal of nursing education and Public health nursing. The results confirmed the still persisting confusion in the definition of the competence and the emergence of the need for defining new nursing competences.
Conclusions: Study confirmed that there are still open questions in the nursing competence research that will require actions on different levels including policy makers, educators and practising nurses.

Introduction

The term "competence" has become one of the more commonly used terms in nursing after two significant events. First was the SLIM (Simpler Legislation for the Internal Market) project's conclusion, that the flexibility of competence approach with its greater emphasis on end results of nurse education has significant advantages over more inflexible rules of, at that time, the traditional model of nursing education (Commission of the European Communities, 1997). The second was the decision made by the Advisory Committee of the European Commission (EC) on training in nursing, that European Union (EU) regulations have to be redrafted, encompassing the concept of competences (Advisory Committee on Training in Nursing, 1998). Additionally, the competence based approach has already become a key policy in the developed world (McAllister, 1998), where nurse education has moved away from the hospital based apprenticeship to the higher education institutions, based on the fact that the competence based approach reduces the conflict between educational and health institutions (Watkins, 2000) caused by this move. Indeed, the competence based approach became the basis for nurse workforce mobility and an integral part of many nurse educational programmes in EU and alienated countries (Cowan et al., 2005).

Definition of Competence

Nursing practice requires a complex combination of various attributes, the requirement which is reflected in one of the first definitions of nursing competence given by Short (1994). Short describes a competence as a quality, possessed by someone, without exact specifications of what one can do in specific circumstances. Ten years later Gonczi (1994) described three ways of conceptualising a competence: as task-based or behaviourist, as general attributes of the practitioner

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which are crucial for effective performance and as general attributes, such as knowledge, skills, values and attitudes, that are needed for intelligent performance. Dunn et al. (2000) on the other hand argue that competence is not necessarily a skill or a task to be done, but a characteristic to act effectively in a specific nursing setting defined by competence standards. These standards are holistic entities interacting with one another in a context of scientific knowledge, clinical skills and humanistic values. A holistic definition of competence was later accepted by other researchers and regulatory bodies (Meretoja et al., 2004; Cowan et al., 2005; Black et al., 2008; Yanhua and Watson, 2011; Garside and Nhemachena, 2013). In Australian national competence standards for the registered nurse, the term competence was defined as "a combination of skills, knowledge, attitudes, values and abilities that underpin effective and/or superior performance in a professional/occupational area" (Nursing and Midwifery Board of Australia, 2006, p. 8). "The ability of the registered nurse to integrate and apply the knowledge, skills, judgments and personal attributes required to practice safely and ethically in a designated role and setting" was a common definition of a competence, defined by 10 different nursing regulatory bodies in Canada (Black et al., 2008, p. 173). Similar definition, namely "the overarching set of knowledge, skills and attitudes required to practice safely and effectively without direct supervision" is used in United Kingdom (UK) (Nursing and Midwifery Council, 2010, p. 145). The American Academy of Ambulatory Care Nursing defined competence as "having the ability to demonstrate the technical, critical thinking, and interpersonal skills necessary to perform one's job" (Laughlin, 2013).

Difficulties in the Nursing Competence Definitions

Despite research described above, there are still flaws in the process of operationalising the competence approach, i.e. their assessment and divergent values by stakeholders (Pijl Zieber et al., 2014). But the confusion about the definition of the competence began much earlier. The assessment process and the extent to which experienced nurses were able to supervise learners, were questioned by Girot (1993). Next, Eraut (1994) highlighted confusion between the competence concept and performance and its relationship to other concepts such as capability and expertise. Bradshaw (2001) raised a fundamental question about the necessary competences of a modern nurse according to a nurse's traditional role in the past (caring for sick patient). Watson et al. (2002) argued in his systematic review of clinical competence assessment in nursing, that the definition of competence was obscure, the measurement of competence was unsystematic and the reliability and validity of measurement tools or strategies were seldom reported. Lack of standards adhered to practice and evaluation of competence was noted by Axley (2008). The problem with different interpretations of competences in the learning and mentoring process was reported by Cassidy (2009). Finally, the lack of consensus about nursing competence definition and validation is not the only pitfall. The ambiguity about how a registered nurse becomes competent and maintains competence is an additional obstacle to implement the competence based approach in the most effective way (Levine and Johnson, 2014).

Bibliometric Analysis

Based on the difficulties presented above and Smith (2012), who claimed that much more research is needed into the field of nursing competences, we decided to make a quantitative, but holistic snapshot not only into the state of the art in nursing competence research, but also in its historical dynamics. For this matter a bibliometric approach was employed. This snapshot could be used by nursing researchers, practising nurses, educators, and policy makers to find the relevant research in most important articles and journals or to guide them where to publish their own research. It could also be used to identify most prolific countries, institutions and researchers and thus locate important research results, information and resources or to find possible research partners. It could also help to recognise most important research topics or be a starting point for integrative, systematic reviews or meta-analysis.

Bibliometrics is defined by Hawkins (2001) as "the quantitative analysis of the bibliometric features of a body of literature". Bibliometric assessments are based on the assumption, that most scientific discoveries and research results are eventually published in international scientific journals, where they can be read and cited by other researchers (Rehn and Kronman, 2008). The purpose of bibliometrics is to map literary production within a given field and to determine the structure of a field of study. It uses quantitative methods for analysing books, journals, and other publications. From this analysis researchers can identify different patterns in the literature. They can find the most prolific authors, institutions, countries, and journals within a field, the types of works cited regarding the rates of literary production over time, and the patterns of communication and collaboration between authors (De Bellis, 2009). Bibliometric studies are also used to examine the history and structure of a field, the flow of information into a field, the growth of literature, patterns of collaboration amongst scientists, impacts of journals, and the long-term citation impact of a work (Garfield, 2006).

Much can be learned about nursing in general and nursing subspecialities by analysing information sources published and their citation records in nursing and other information sources. The bibliometric techniques applied to nursing literature could reveal a great deal of information as to how research is performed and research outcomes are transferred to nurses whether in clinical or non-clinical environments. The knowledge as to how to interpret research findings and evaluate their usages within practical settings may contribute to research development as well as to evidence-based practice (Niederhauser, 2005). So it is quite surprising that until recently so few bibliometric studies have been done on nursing literature (Smith and Hazelton, 2008). According to Davidson et al. (2014), who performed a search including search strings on "bibliometrics", "nursing" and "midwifery" and found 367 articles in the CINAHL, Medline and Scopus databases, much has changed over the last few years. Our own research into this topic showed that bibliometrics within nursing has been used for various purposes. An early bibliometric study in nursing performed by Pardo et al. (2001) showed how bibliometric references in Spanish nursing research papers had evolved over a decade. Oermann et al. (2007) describe the extent of research, clinical, and evidence-based practice articles, published in maternal/child nursing journals and the information sources used to develop that literature using citation analysis. Yucha et al. (2011) used bibliometrics to assess the methodological qualities of 133 quantitative nursing education research articles published between July 2006 and December 2007, and Wiles et al. (2013) analysed seven Australian nursing and allied health professional journals from 1985 through to 2010 in order to evaluate different health professions. In other papers more bibliometric approaches have been presented such as identifying nursing research hotspots (Lu et al., 2014), making "snapshots" for clinical practitioners (Zhang et al., 2011) and visualising nursing research (Alfonzo et al., 2014).

Aim and Scope

The objective of the presented study was to analyse the research literature production in the area of nursing competences in relation to the information source publishing dynamics, a snapshot of more prolific entities and visualisation/mapping of term clusters and term–year associations.

In the next chapter we present the Materials and Methods section in terms of research questions, search strategy, obtaining bibliometric data and the analysis methodology. The Results section provides the answers to the three research questions and in the Discussion section we interpret and compare the obtained results. In the Conclusion section we outline some practical implications and guidelines for future research.

Materials and Methods

Research Questions

In our study we aimed to answer the following research questions:

RQ1: What is the shape of the dynamics of research literature production in nursing competences?
RQ2: What are the more prolific countries, institutions and authors (according to the number of published information sources) and papers (according to number of citations) in nursing competence research?
RQ3: How is the content of research in nursing competences reflected in the term clusters and in associations between more frequent terms and publishing years?

Search Strategy

We searched the Scopus database in May 2014 using the following search string: "nursing competenc*" (* is the wild character representing any string) in the titles, abstracts, and keyword fields. We limited the search to Document Type = Article OR Review, publication years = 1981 (the first information source found in Scopus was from 1981)–2012 and Subject Area = Nursing.

Obtaining Bibliometric Data

Common elements of bibliometric data were extracted from each information source namely, the abstract, the name of the institution and nationality of the author's affiliation, the year of publication, source title and the number of citations. The bibliometric data were first entered into the Excel spread-sheet; pre-processed using built-in Excel functions and then transferred into SPSS and "VosViewer" for text analysis.

Analysis

The most prolific countries, institutions, and authors were identified with Excel functions based on the number of published information sources as well as most cited papers. The journal and country ranks were downloaded from the SciMago Journal and Country rank website (Elsevier, 2014) and matched via the source title field. For each prolific country we identified its rank within nursing research category, educational research category and total country scientific activity. For each more prolific source title we identified its ranking within the nursing category and educational category and its ranking amongst all source titles found in the SciMago rank website. Additionally we matched more prolific source titles with Hunt's list of 10 most prominent nursing education journals (Hunt et al., 2013).

The association between more frequent terms and publishing years was analysed using the correspondence analysis in SPSS 22 using default parameters. The visualisation of term clusters was done using the VosViewer software (Van Eck and Waltman, 2013).

Results

The search of the Scopus bibliometric database resulted in 370 information sources (288 original articles and 82 review articles) published from 1981 till 2012 in 124 different source titles by 841 authors. The number of citations varied from zero to 69.

The Dynamics of Research Literature Production

The number of published information sources per year is shown in Fig. 1. We can see that the first paper was published in 1981 in the journal Nursing Research and dealt with the question "Is it the structure or the competency of the nursing staff that improves the quality of primary nursing over team nursing?" (Shukla, 1981). During the first 13 years the production was low. The steady increase began in 1994 and the number of information sources began rising exponentially in 2003, and then became steady again in 2008 with a slight drop over the latter two years. The peak was achieved in 2006, and it is our belief that the reason was in the larger number of published information sources within two information titles namely the Journal of Nursing Administration (10 information sources) and Public Health Nursing (6 information sources), and further due to the increased number of information titles published within the area of nursing competences.

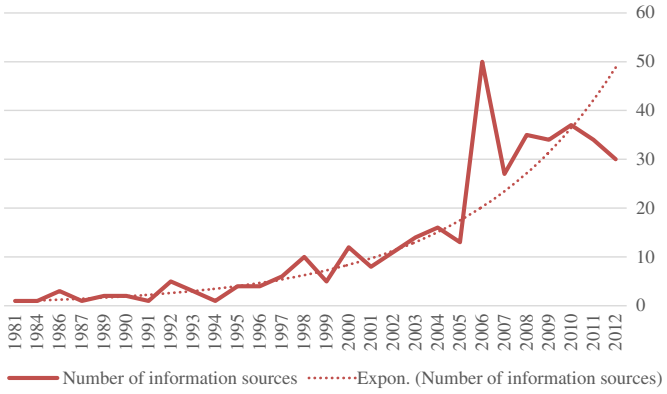

Fig. 1. The number of published information sources per year.

Fig. 1 and the text above give the answer to RQ1: What is the shape of the dynamics of research literature production in nursing competences?

More Prolific Research Entities

The information sources were published by authors coming from 41 countries. The 11 more prolific countries are shown in Table 1. These 11 countries produced more than 78% of the research production regarding nursing competences, and the first three of them more than half. It is interesting to note that all five continents are represented amongst the more prolific countries. The SciMago ranks show that the research is done by those countries that are also top ranked in the wider area of nursing in general (the lowest rank is 29), education (the lowest rank is 21) and in total scientific country activity (the lowest rank is 35).

The information sources were published in 124 different source titles. The 11 more prolific titles are shown in Table 2. Those 11 titles represent slightly more than 43% of research production within the

Table 1
More prolific countries in nursing competence scientific production and their SciMago Country rankings.

Country	Number of information sources	% of scientific production on nursing competences	SciMago Country rank		
			Nursing	Education	Total scientific activity
United States	161	43.51%	1	1	1
United Kingdom	40	10.81%	2	2	3
Australia	24	6.49%	3	3	11
Sweden	15	4.05%	8	17	18
Taiwan	13	3.51%	15	11	16
Canada	8	2.16%	4	4	7
China	7	1.89%	13	10	2
Norway	7	1.89%	16	21	31
Brazil	5	1.35%	7	8	15
Finland	5	1.35%	19	18	26
South Africa	5	1.35%	29	15	35
Total	290	78.38%			

Table 2
Most prolific information titles and their SciMago Journal rankings.

Information title	Number of information sources	% of scientific production on nursing competences	SciMago Journal rank			Hunt's rank
			Nursing	Education	All information titles	
Journal of Clinical Nursing	24	6.49%	55		5161	
Journal of Nursing Education	21	5.68%	51		3908	4
Public Health Nursing	20	5.41%	135		9270	
Nursing and Health Sciences	16	4.32%	124		8888	
Journal of Advanced Nursing	15	4.05%	35		3699	
Nurse Education Today	14	3.78%	39	79	3994	2
Journal of Nursing Administration	12	3.24%	44		4194	
Critical Care Nursing Quarterly	11	2.97%	129		9056	
Nursing Outlook	9	2.43%	33		3528	3
Journal of Professional Nursing	9	2.43%	69		6312	5
Journal of Nursing	9	2.43%	261		14,787	
Total	160	43.24%				

nursing competence field. The SciMago Journal's rankings amongst nursing, education and all information titles reveal, that the information sources in nursing competences are not published in top ranked information titles neither in nursing (the highest journal rank is 33), education (only one of the more prolific journals is ranked in the educational field) or amongst all information titles (the highest journal rank is 3528). Only 4 of the more prolific information titles can be found in the list of 10 more prominent journals in nursing education as were identified by Hunt et al. (2013) — last column in Table 2 (Hunt's rank).

Altogether there were 841 different authors authoring 370 information sources (2.89 ± 2.15 authors per information source). In more detail, 759 authors published 1 information source, 74 authors 2 information sources, 6 authors 3 information sources and 2 authors 4 information sources each. The more prolific authors were Brad Shaw Ann, and Jenkins Jean with 4 published information sources, and Ahmadi Firoozeh, Cowan David T., Murrells Trevor, Tzeng Huey-Ming, Van Leeuwen Renatus Ronaldus and Wendt Anne with 3 published information sources.

The more prolific institutions came from the United States of America, the United Kingdom, Hong Kong and Iran. First on the list was King's College London with 9 information sources, followed by Hong Kong Polytechnic University with 5 information resources. The next 7 institutions on the list published 4 information sources and were the University of Texas School of Nursing in Houston, Duke University, University of Washington Seattle, Georgetown University, The University of North Carolina at Chapel Hill, Sahlgrenska Academy Tehran University of Medical Sciences, and the Texas University System.

Altogether, information sources from the corpus were cited 1662 times (5.16 ± 9.73 citations per information source). Three of the more cited information sources were:

Journal of Nursing Scholarship, Volume 33, Issue 2, June 2001, Pages 147–151, Are nurses adequately prepared for end-of-life care? White, K.R., Coyne, P.J., Patel, U.B.; 69 citations

International Journal of Nursing Studies, Volume 39, Issue 2, 2002, Pages 133–145, The validity and reliability of methods to assess the competence to practise of pre-registration nursing and midwifery students, Norman, I.J., Watson, R., Murrells, T., Calman, L., Redfern, S.; 63 citations

Journal of Advanced Nursing, Volume 33, Issue 4, February 2001, Pages 467–474, Nursing competences: Personal characteristics contributing to effective nursing performance, Zhang, Z.-X., Luk, W., Arthur, D., Wong, T.; 51 citations.

The above presentation gives the answer to RQ2: What are the more prolific countries, institutions and authors (according to the number of published information sources) and papers (to number of citations) in nursing competence research?

Text and Term Analysis

Fig. 2 presents the term cluster derived from the information sources' abstracts and titles using the VosViewer software. The common English function words, such as “for”, “or”, “where”, “how”, “the” and similar, were omitted. As can be seen in Fig. 2 the terms formed three clusters and it is interesting to note, that the terms “nursing competency” and “nursing competence” belong to two different clusters. The first cluster includes the terms nursing, health care, nursing practice, and health — thus this cluster is more job oriented. The second includes the terms student, skill, educators, and evaluation so this cluster is more associated with education and learning. The third cluster contains the terms like hospital, impact, and patient and is in this manner oriented to the nursing practice and working environment.

Fig. 3 presents the bi-plot graph of term–year associations derived from the correspondence analysis for the period, when more intensive research literature production was performed, i.e. from 1991 to 2012. These associations in combination with the dynamics of the research literature production and the short qualitative review of the literature given in the introduction are summarised in Table 3.

Figs. 2 and 3 together with Table 3 give the answer to RQ3: How is the content of the research of the nursing competences reflected in the term clusters and in associations between most frequent terms and publishing years?

Analysis by Nursing Specialities

Analysing competences by speciality revealed three specific subfields namely Community health nursing, Public health nursing and Psychiatric nursing represented by 49, 18 and 15 information sources respectively. The shape of the research literature production dynamics resembles the shape of the complete competence field shown in Fig. 1. It starts with a steady increase, followed by an exponential increase, the peak production in 2006 and then a slow decline in the number of published information sources. The most prolific country in all three fields is once again the USA (26 information sources, 53%), followed by the United Kingdom in Community health nursing (7 information sources 14%), and Australasia in other two specialities (2 information sources, 11% and 13%). The vast majority of information sources are published in the Public health nursing source title (20 information sources in Community health nursing (41%)).

Discussion

Our study identified a growth in research literature production in the field of nursing competences. It showed an increased interest of researchers in this topic in general as well as in three most prolific subfields namely community health nursing, public health nursing

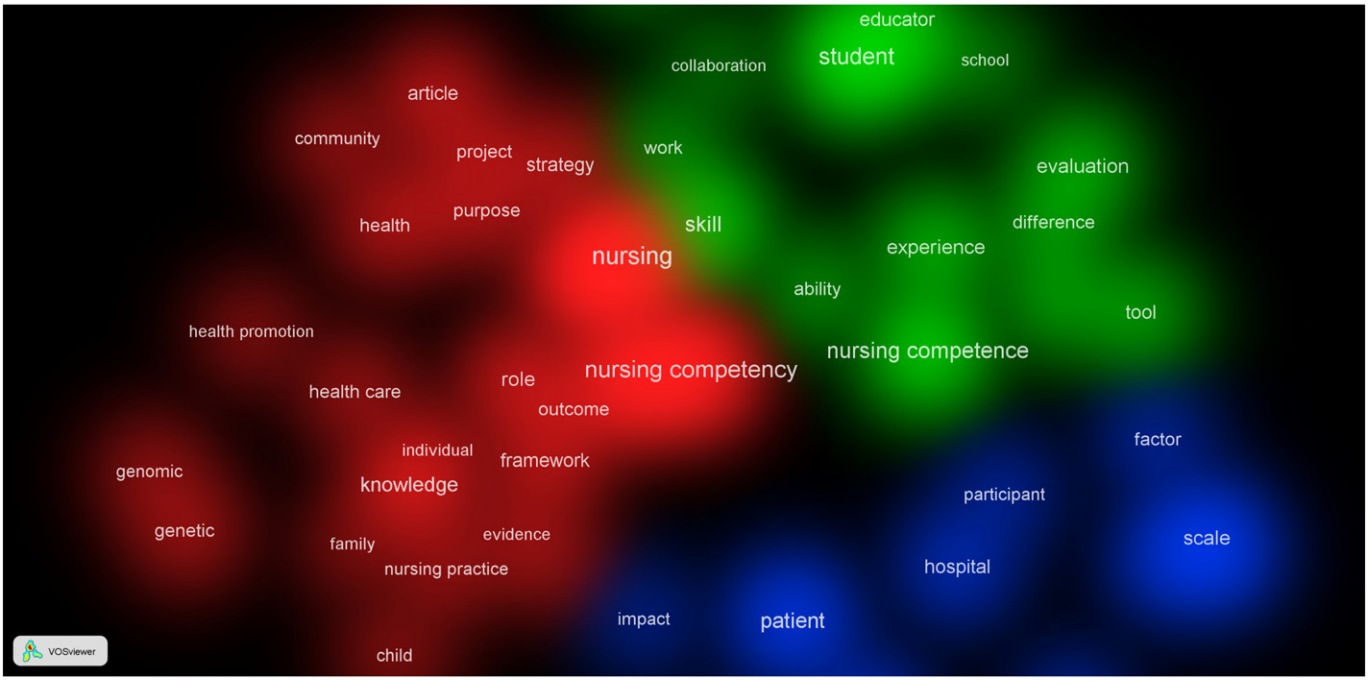

Fig. 2. Term clusters derived from information sources' abstracts.

and psychiatric nursing. The start of the steady growth in the literature production coincides with the SLIM project report (Commission of the European Communities, 1997) and the recommendation to the EU by ACTN (Advisory Committee on Training in Nursing, 1998). On the other hand the exponential growth overlaps with the operationalisation of the Bologna process (Wikipedia The Free Encyclopedia, 2014) as well as with the implementation activities of the Tuning project (University of Groningen, 2014). All above measures changed and revolutionised, both, the nursing education and practice as well as research in nursing competences. The slight decline in literature production growth in 2011 and 2012 might be a reflection of the fact that the Bologna reform was over in the EU. The new challenges of the Bologna reform to nursing

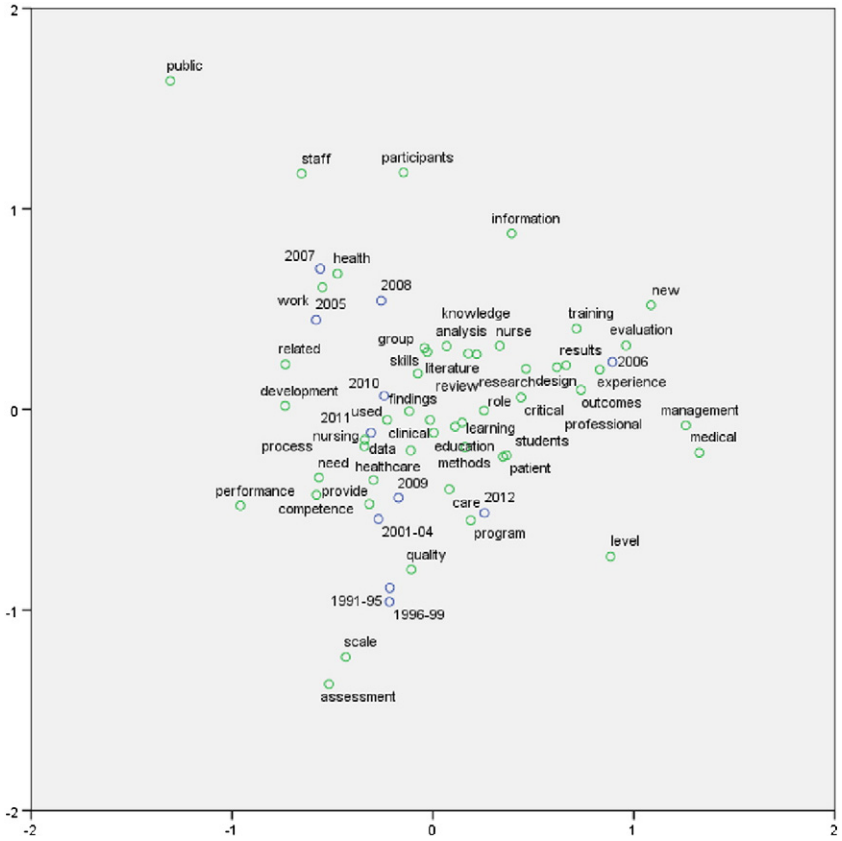

Fig. 3. The association between words and years of publications of the 1991–2012 period.

Table 3
Research literature production dynamics, research milestones and associated terms.

Period	Growth in research literature production	Associated terms from correspondence analysis	Research milestones on definition of nursing competence
1991–1999	Low till 1994 Steady	"scale", "assessment", and "quality"	Forming the holistic definition of competence (Gonczi, 1994); SLIM project results published (Commission of the European Communities, 1997) and decision made by the European Commission (EC) Advisory Committee on Training in Nursing that EU regulations have to encompass the concept of competences (Advisory Committee on Training in Nursing, 1998); nurse education has moved away from hospital based apprenticeship to the higher education institutions (McAllister, 1998).
2000–2004	Steady	"scale", "assessment", "quality", "provide" and "competence"	Competency based approach becomes the basis for nurse workforce mobility and an integral part of many nurse educational programmes in EU and alienated countries (Cowan et al., 2005). A holistic definition of competence accepted by other researchers and regulatory bodies (Meretoja et al., 2004; Cowan et al., 2005)
2005–2008	Exponential Peak in 2006[a]	"health", "work", "staff" and "participation". "training", "results", "design", "outcomes", "evaluation" and "experience".	Holistic definition of competence accepted by other regulatory bodies (Nursing and Midwifery Board of Australia, 2006; Black et al., 2008; Nursing and Midwifery Council, 2010; Laughlin, 2013) Recognition of need for specialised competences and skills (Baldacchino, 2006; Defloor et al., 2006)
2009–2012	Steady till 2010 Falling	"care", "healthcare" and "provide" (2009), "findings" and "skills" (2010); "nursing", "process" and "data" (2011), "program" and "care" (2012)	The problem with different interpretations of competences in the learning and mentoring process encountered (Cassidy, 2009); much more research is needed into the field of nursing competences (Smith S., 2012); the ambiguity about how a registered nurse becomes competent and maintains competence recognised as an additional obstacle to implement the competency approach in the most effective way (Levine and Johnson, 2014)

[a] Year 2006 is far away from the period 2005–2008 in the bi-plot, indicating very weak association with it.

such as global cross-border standardisation, global regulation (Collins and Hewer, 2014), and spreading of the Bologna process and Tuning project to other continents (Zmas, 2014) still suggest however, that more research on nursing competences especially cross-cultural research is required. It has not yet been reflected in the publishing frequency of information sources.

The correspondence analysis showed that the steady period of research literature growth (1991–1999) was associated with the terms "assessment", "scale" and "quality". It possibly indicated a growing interest in the research of nursing competences and their assessment and possible implications to quality improvement in education and practice. In the next period (2001–2004) the strong association with the term "competence" emerged. It is most likely due to the operationalisation of the Bologna reform, Tuning project result implementation and integration of the concept of nursing competence in educational and training processes. The association of the terms "health", "outcomes" and "experiences" in the next period (2005–2008) might indicate the shift of research interest from using the concept of the competence in education to its outcomes and experiences gained in health practice. The last period (2009–2012) is associated with the terms "healthcare", "provide", "findings" "process" and "data". It shows new research trends in relation to nursing competences possibly including research on new competences related to data/information communication technology; and competences related to nursing research and evidence based nursing.

The cluster analysis revealed an interesting fact, namely terms "competence" and "competency" belong to two different clusters, implying that those two terms have different meanings. As seen from the context of clusters the term "competency" might be more nursing practice-oriented and the term "competence" more educational oriented. This differentiation has also been noted and discussed in detail by Cowwan et al. (2005), but not given any specific definitions about the distinction. In contrast Mustard (2002) defined competence as a potential capability for undertaking a job and competency as the actual performance in complying with standards of care, which is in general consistent with our finding above. It is also interesting to note, that in the nursing competency cluster we can find the terms "genomic" and "genetic", indicating that genomic and genetic competences might be needed by a contemporary nurse to perform her job successfully. Indeed, this need was already discussed quite a while ago (Lewis et al., 2006) and also recently (Kirk et al., 2014).

The analysis of the most prolific institutions and countries highlighted the important fact that the research on nursing competences is spread over all five continents showing its global importance. The research is performed by countries that are also strong in research in nursing, education and in total country research activities. This means that the research on nursing competences follows the usual patterns and has found its place within the research agendas of top research institutions. Source title publishing patterns show that authors tend to publish information sources related to nursing competences in more general nursing journals and not as someone might expect in journals related to education. It is also evident that authors don't publish their research in top nursing journals. This may be due to the fact that the editors of those journals don't prefer papers on nursing competences; either because they are out of the scope or the quality of the research is as yet adequate. Due to the importance of the topic this fact may imply that research should be intensified. Due to its educational aspects it should also focus more, not only on the definition of competence and competency, but also on the pedagogical and didactical principles of implementing the concept of competence in educational and training settings.

This study confirmed that there are still open questions in the definition of competence. The difference between competence and competency is not yet resolved, and the emergence of information and communication technology, biomedicine/bioinformatics and globalisation in nursing has identified the need for new competences required by a contemporary nurse. This will require action on different levels. Intensified research endeavours and publishing the results in source titles (journals, conferences) with the highest impact are needed. Transfer of the research outcomes to the governing and policy bodies in the manner to standardise the definition of competence and adapt the current competence sets to new requirements and accordingly change regulations. It is also necessary to implement these changes in nursing curricula and educational programmes, and finally implement these changes in nursing practice.

Strengths and Limitations

The main strengths of this study are that it is the first bibliometric study on nursing competences and it reveals a number of characteristics of the research literature production in this field. The limitation of this study was in using the Scopus database alone, therefore it is possible that some important information sources may be missing from the analysis. The country and journal ranks were taken from the SciMago website; meaning that the rankings may be different from other bibliometric databases such as for example Web of Science. The term association analysis was made on information sources' abstracts, thus the results may be different if analysing whole articles. Additionally,

we only reviewed English written information sources, meaning that sources in other languages might have been overlooked.

Conclusion

The area of nursing competences has attracted authors to increasingly produce research literature in this field over the last two decades, especially after the changes in EU legislature regarding work mobility, Bologna reform operationalisation and the implementation of Tuning project outcomes. The research outcomes however, have not yet appeared in the top nursing journals. The research was performed on all five continents in countries with strong research in nursing in general, but was mostly concentrated on the United States of America, the United Kingdom and Australasia. Text mining and analysis showed the change of research interest through the various periods. It started with the research on the definition of the nursing competence, accepting the holistic definition by various nursing councils in different countries, and the implementation of the concept in educational and practice settings. Finally it revealed that still much research is needed especially in the standardisation of the definition of the competence and adaptation of competence set, required by globalisation, demographic changes and advancement of information and communication technology and biomedical informatics.

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