



Contribution of Italian nursing professors to international Literature: 2000 - 2016 review

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ABSTRACT

Background: The purpose of the study was to assess Italian nurse academics' scientific activity by exploring their publications in international journals.

Background: The scientific production of a discipline's academics is a requisite for the university accreditation process and for employment in academic positions. It can also be used as an indicator of the maturity and importance of a given discipline in a country. Italian nurse academics' scientific production has not been analyzed recently.

Method: Quantitative descriptive study on an observation period of 16 years, from 2000 to 2016.

Methods: All Italian full-time academics in the sector of General, Clinical, and Pediatric Nursing Sciences were identified, based on selection criteria. All their publications in indexed international journals were systematically collected between November 2016 and February 2017.

Findings: Twenty-five Italian nurse academics were identified, and 450 of their publications met all our inclusion criteria, with a mean of 18 publications per author (range 0–88). There was a steady growth in the number of publications over time. Sixty-five percent of articles were published in nursing journals. Eighty-six percent of the publications were on nursing topics, the most popular being clinical issues (53.8%). Eighty percent of the publications were “applied research articles” and most of them adopted a quantitative approach with a descriptive study design. Hospitals and clinics were the most common settings studied, while patients and caregivers were the participants most often involved. Foreign coauthors contributed to 30% of the articles.

Discussion: Italian nursing academics contribute adequately to scientific production in the nursing sector.

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Introduction

Research is an activity that contributes strongly to enhancing the quality of nursing care (Khalaf, 2013). Now that nursing education in Italy has shifted to a higher level in the education sector, there is a stronger emphasis on research in nursing and evidence-based practice. Those who undertake such research are encouraged to address questions pertinent to nursing practice, and to produce findings relevant and useful to practitioners (Borbasi, Hawes, Wilkes, Stewart, & May, 2002). Advanced knowledge deriving from research is made available and disseminated primarily through the international literature (Hack, Crooks, Plohman, & Kepron, 2010). Publishing in international journals is no longer an activity reserved for a few scientists. It has become an ongoing process for providing evidence to support practice and increase the knowledge base of a discipline (Wilkes, Borbasi, Hawes, Stewart, & May, 2002).

In Italy, a university Bachelor's degree has been mandatory for entering the nursing profession since 1990, and an advanced nursing education can then be completed with Master's and PhD courses in Nursing Science. The first professorship in nursing was established at the University of "La Sapienza" in Rome in 2000. The opportunities for a university career provided a great impetus for growth in nursing research in Italy, as already seen in other countries (Bjørn, Hundrup, & Wagner, 2008).

The aim of this study was to assess Italian nurse academics' scientific activity in recent years by describing their publications in international journals. The scientific production of university professors in this discipline is considered a requisite for the university accreditation process and academic tenures, and it is a requirement for employment in academic positions (Bjørn et al., 2008). The academics' contribution to the scientific literature can also be seen as an indicator of the maturity and importance of a given discipline in a country (Tahamtan et al., 2014). Analyzing the features and content of scientific publications by Italian nurse academics is therefore crucial to tracking the development of this discipline's knowledge base in Italy. Such an analysis can also provide new insight on any shortcomings and potential for improvement, as well as specific information for assessing the efficacy of the Italian nursing world's strategies for developing its academic dimension (Pecile & Zanotti, 2002; Zanotti, 1999).

Background

In the past 20 years, nursing researchers have made an effort to examine the quality and scale of research in the field of nursing, adopting a variety of methods and theoretical approaches. Some studies used bibliometric methods applied to articles published over a well-defined period, producing information on productivity (Hack, Crooks, Plohman, & Kepron, 2010; McKenna, Cooper, Cant, & Bogossian, 2017). One of the most used

bibliometric measures of an article's quality is the journal in which the paper is published. A journal's impact factor is based on two elements: the numerator, which is the number of citations in the current year to items published in the previous 2 years, and the denominator, which is the number of substantive articles and reviews published in the same 2 years. (Garfield, 2006). An additional index is the "h-index" as a metric for individual-level performance used in contemporary academia. It is a single number reporting an author's papers that have at least the equivalent number of citations (Davidson et al., 2014).

Other studies analyzed the methods and content of a sample of articles randomly selected from nursing journals (Borbasi et al., 2002; Polit & Beck, 2009; Zanotti, 1999). Some authors have described nursing academics' clinical outputs referring to specific areas (e.g., mental health nursing; Crowe and Carlyle, 2007; Higgins & Farrelly, 2007), or to specific countries, e.g., Australia (Borbasi et al., 2002; Wilkes et al., 2002), Africa and the Middle East (Adejumo & Lekalakala-Mokgele, 2009; Alhusaini, Sun, & Larson, 2016), UK (Cecil, Thompson, & Parahoo, 2006), Slovenia (Dornik, Vidmar, & Zumer, 2005), Jordan (Khalaf, 2013), China, Taiwan and Hong Kong (Li, Wei, Liu, & Tang, 2009; Peng & Hui, 2011; Zhang et al., 2016), Latin America (Mendoza-Parra, Paravic-Klijn, Munoz-Munoz, Barriga, & Jimenez-Contreras, 2009), Iran (Tahamtan et al., 2014), and Italy (Pecile & Zanotti, 2002). Other reports have specifically examined nursing research published in nursing journals, taking a global approach in painting an overall picture of nursing research internationally (Dougherty, Lin, McKenna, & Seers, 2004; Dougherty, Lin, McKenna, Seers, & Keeney, 2011; Oermann et al., 2008; Polit & Beck, 2009). Due to significant differences in the methods used and the samples considered, findings from these studies are difficult to compare. There has never the less been a clearly-identifiable growth in nursing research, with a prevalence of quantitative studies, and increasing numbers of papers by multiple coauthors and international collaborative studies. Unlike other health care disciplines, there is still a clear interest in studying nurses rather than patients, which brings to mind Henderson's comment that "nurses are more interested to studying nurses than the differences that nurses can make in people's lives" (Barron, 1996).

Only three studies have been published in the international literature about nursing research activity conducted in specific national academic settings: one in Denmark (Bjørn et al., 2008); one in Canada (Hack et al., 2010); and one in Australia (McKenna et al., 2017). Bjørn et al. (2008) examined the scientific production of 38 PhD-qualified Danish nurses during the course of their doctorate in terms of type of article, language, focus, method, author's academic role, and journal. The Canadian review (Hack et al., 2010) focused on researchers holding academic appointments as assistant, associate or full professors in Canadian universities, ranking the top 20 professors

in terms of citations and h-index, and creating a list of the 20 most cited journal papers written by Canadian nursing professors. McKenna et al. (2017) described a sample of 150 Australian professors of nursing and midwifery at 34 universities, and their research activity was assessed using Scopus, calculating each professor's total number of publications and h-index.

For the present study, we analyzed Italian nursing academics' scientific activity by counting each individual's publications in international journals to measure their productivity. We reviewed the publications based on several criterias: the journal's focus, research topic, study design and method, setting, participants, and results.

Materials and Methods

Aims

The aim of this study was to identify the contribution of Italian nursing academics to the international literature. The primary objective was to quantify the scientific productivity of Italian nursing academics. The secondary objective was to classify the content of their publications with a view to establishing a baseline for future national and international benchmarking.

Design

The study used a quantitative descriptive design with an observation period of 16 years, from 2000 to 2016.

Study Population

Two populations were identified: (a) nurse academics in full-term employment as researchers or professors of nursing at Italian universities; (b) articles written by these same Italian nurse academics and published in international journals.

The "nurse academics" were defined as Italian academics (assistant, associate, and full professors) belonging to Italian university departments of general, clinical, and pediatric nursing sciences. All full-time employees in one of the above-mentioned positions were eligible and included in the analysis. The academics' names, and the dates of their appointment were retrieved from the freely accessible database of the Italian Ministry of Education. The sample was assessed against our exclusion criteria, which were: (a) lack of a nursing qualification (e.g., physicians or biologists with no nursing training); (b) a short-term employment contract; and (c) appointment by a university after 2015. For our data analysis, all the academics identified were stratified by name and surname, affiliation, academic role, and year of appointment by a university.

All the previously-selected articles published by Italian nurse academics (INAs) were collected systematically from the year 2000—when a university course in nursing was first established in Italy—to 2016. A literature search was run in PubMed and Scopus, using keywords such as the full name and surname of each INA (Name Surname [AU]). For a small sample of authors included in the study, a cross-research comparing PubMed and CINHALL were carried out. The only difference was the publication of the journal in other national languages were not indexed, a circumstance which did not match our inclusion criteria. Book chapters and conference papers were excluded, as were publications written in languages other than Italian or English. Articles without abstract, editorials, letters, discussion papers, case reports, and commentaries were excluded as well. To be included, articles also had to be published in peer-reviewed international journals indexed in ISI during the period from a given INA's year of appointment to December 2016. A publications list was created for each INA, and each article was downloaded or retrieved through the university library service.

Shared authorships were included when calculating each individual's scientific production (group A), but the overall contribution of the INAs to the international nursing literature was filtered by cross-authorships to avoid duplicates in the analysis by publication (group B).

Data Collection

The data search was performed between November 2016 and February 2017. Each published article matching the selection criteria was coded and entered in a database. The search, revision, and classification of the publications were done in double blind by two nonacademic coauthors who then compared their results. Articles were classified by authorship (first or sole author, second, last or in other positions), title and year of publication, type of publication, number of citations (CI), and whether they were available in PubMed and/or Scopus. For each article selected, the characteristics of the journal retrieved were: the journal's name, whether it was Italian or international, and its impact factor (IF), ascertained as stated in the Journal Citation Report (2015). The full text of each article meeting our inclusion criteria was assessed in terms of the 5 variables shown in Table 1.

Ethical Considerations

Only published information or public websites were accessed for the purposes of this study. The national registries, indexes of publications, and home pages used to identify participants and collect data are all in the public domain. No ethical approval was therefore necessary. One of the authors of this study is included in the list of analyzed INAs. In order to maintain control of any potential conflict of interest, such author

Table 1 – Variables Considered in Review of Selected Published Articles

Variable	Description
1. Focus of the journal	Nursing journals (reference to nursing in the ISI journal description) Non-nursing journals
2. Research topic	Nursing research topic: nursing area was specified (clinical, philosophy and nursing theories, ethics, nursing education, management); article title, keywords or MeSH terms were used to establish the main and secondary research topics Non-nursing research topic
3. Methods	“Applied research articles”, classified by research method (quantitative, qualitative or mixed); quantitative “applied research articles” were further classified by study design (experimental or quasi-experimental, observational or descriptive, and for instrument/scale validation) “Other research articles”, classified as reviews (narrative, integrative or systematic, meta-analyses or meta-synthesis) and original articles on theoretical, methodological and ethical topics not involving any data collection
4. Setting and participants (for “applied research articles” only)	Study setting: hospital, nursing home and hospice, general practitioner, community center and residential facility, university, or other Study participants: nurses, other health professionals, students, patients and caregivers, or other
5. Collaborations	Multicenter study conducted in Italy or elsewhere Involvement of foreign coauthors

did not participate in data collection and classification. His contribution is confined to the overall design and discussion of results based on anonymized data.

Data Analysis

The data analysis was performed using MS Access and Excel. All study variables were analyzed using descriptive statistics (frequencies and percentages, means, median, and range).

Findings

Authors' Characteristics and Productivity Measures

The sample consisted of 25 out of 38 INAs in full-time employment, including: 19 associate professors, five assistant professors, and one full professor. These 25 INAs were employed at 16 Italian universities. Their years of academic activity ranged from 5 to 16, with a mean of 10.8 years. In all, 1,126 publications by the 25 INAs were retrieved, and 450 of them met all the inclusion criteria (see [Figure 1](#)).

Of these 450 publications, 437 (97.1%) were found in PubMed, and 439 (97.5%) in Scopus; 426 publications (94.6%) were available in both databases. The number of publications in group A ranged from 0 to 88, with a mean of 18 per author (average early productivity 1.7 [0–8] publications). Two INAs had no retrievable publications in international journals with an IF. Considering the 16 universities where there were INAs, the results indicated that nine universities with only one INA had produced 45% of the total number of publications, five universities with two INAs had contributed 35%, and

two universities with three INAs each had produced only 20% of the 450 publications. A single university with only one INA had been responsible for nearly 20% of all the publications. The number of publications in group A in which the INA was the first author ranged from 0 to 48 with a mean of 4.1 per author (17.5% of the publications), while the number of publications in which the INA was the last author ranged from 0 to 28, with a mean of 6 per author (34.6%) (see [Table 2](#) in Supplementary Data). For publications in group A there was a mean of 6 (3.9–11.7) coauthors (authors other than INAs). The authors' total IF of the journals they published in group A ranged from 0 to 134.8. For individual authors' the IF of the journals they published in ranged from 0 to 5.3, with a mean of 1.8. The total number of citations ranged from 0 to 996, with a mean of 140.7 citations per author. There was a mean of 8 citations per article (range 0–47.4). The single most often cited article had 733 citations, while another 10 articles (all but two of them published in non-nursing journals) had been cited at least 40 times. Eight of the 25 INAs had authored the most cited articles. All detailed information, including bibliometric indexes is presented in [Table 2](#) (Supplementary Data).

Characteristics of the Publications

Growth Over Time

The time trend of the publications was only calculated for the 348 publications in group B (publications filtered by cross-authorship). The first publication dated from 2000, but only a handful of papers were published between 2000 and 2011. The publication rate increased sharply in 2012, and the number of articles published since has been increasing continuously. From 2014 onwards, the publications increased steadily year by

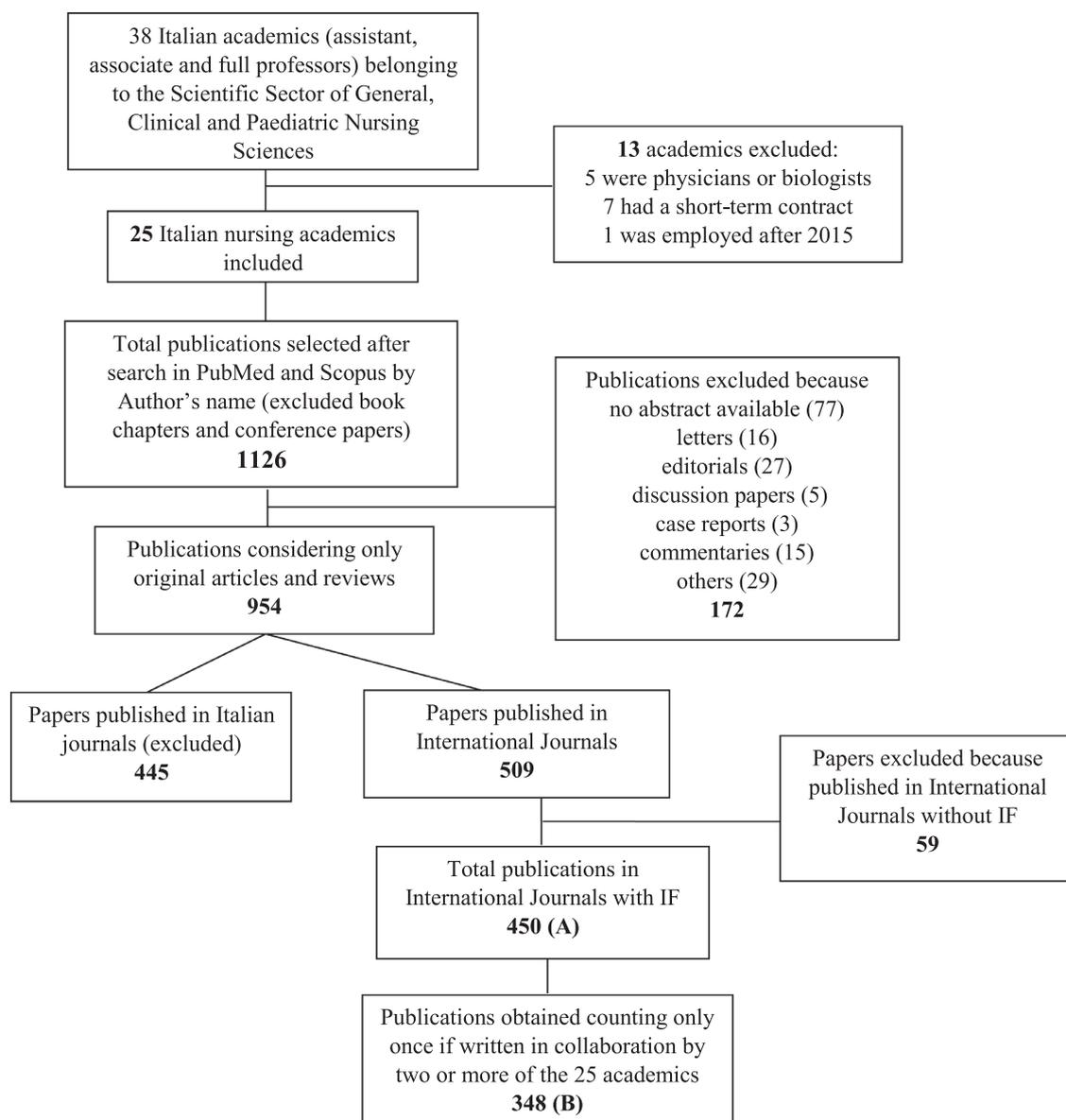


Figure 1 – Design for selecting academics and publications with outcomes.

year, accounting for nearly half of the total number of publications gathered in our sample (164/348, 47%). The same positive trend is evident after dividing the number of publications by the number of university professors in service by year (see [Figure 2](#)).

Publishing Journals

The 348 articles reviewed were published in 145 journals. The “non-nursing” journals outnumbered the “nursing” journals (87 vs. 58), but only 35% of the papers ($n = 121/348$) were published in “non-nursing” journals, as shown in [Table 2](#). Among these “non-nursing” journals, those publishing the largest number of Italian academics’ papers were: *Journal of Evaluation in Clinical Practice* (IF = 1.053), *Journal of Palliative Medicine* (IF = 2.023), and *Supportive Care in Cancer* (IF = 2.535), each accounting for five articles (4.13% each). One article was published in *The New England Journal of*

Medicine, ranking first in terms of IF (59.558), and citations (733). Another 65% of the articles ($n = 227$) were published in nursing journals. The three most popular were: *Journal of Clinical Nursing* (IF = 1.384) with 21 publications (9.25%), and *Journal of Advanced Nursing* (IF = 1.917), *Nurse Education Today* (IF = 1.591) with 19 publications each (8.37% each). Among the nursing journals, the one with the highest IF was the *International Journal of Nursing Studies* (3.561) which published 11 articles (3.16%).

Focus of the Articles

The focus of the publications reviewed related mainly to nursing and its professional domain: 86% (300) of the articles concerned nursing research topics, while 14% (48) investigated non-nursing issues. Among the 300 articles on a nursing topic, 53.8% (161) focused on clinical practice issues, 16.3% (49) on nursing

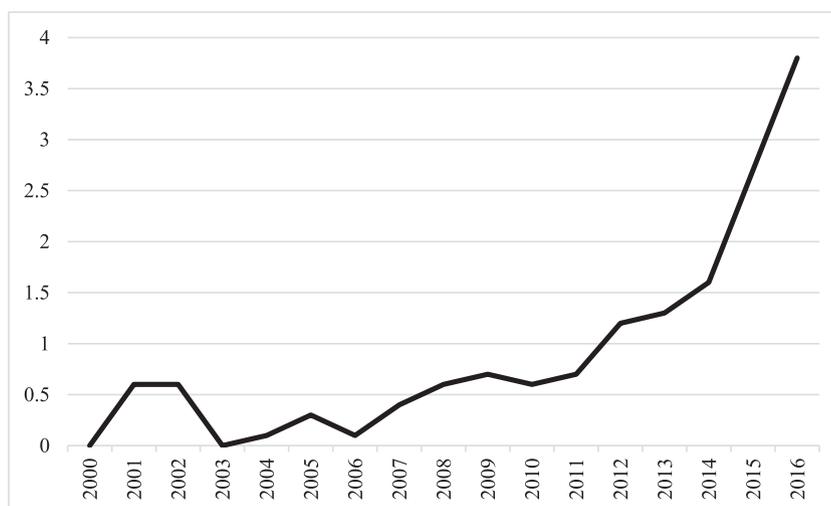


Figure 2 – Time trend of publications (Figure 1, group B) corrected for number of academics in service each year.

education, 12.3% (37) on management issues, 9.3% (28) on ethics, and 8.3% (25) on philosophy, nursing theories, and research methodology (see Table 2 for details). When these 161 studies on clinical issues were further analyzed by research topic, the results showed that the most often studied clinical domains were: “oncology and cancer care” (30, 18.6%); “self-care and adherence in chronic diseases” (22, 13.6%); “geriatrics” (21, 13%); “measurement instruments and

scales” (17, 10.5%); “heart failure” (16, 9.9%); “quality of life” (13, 8%); “end of life and palliative care” (13, 8%); “vascular device management” (12, 7.4%); “caregiver health” (11, 6.8%); and “pain and symptom management” (10, 6.2%). All other resulting clinical topics counted for less than 6%.

Study Design and Method

Out of 348 publications, 282 (81%) were studies involving data collection and analysis, therefore, classified as “applied research articles,” while 66 (19%) lacked these features and were classified as “other research articles”, and further divided into: (a) reviews (50, 76%); and (b) theoretical, ethical, and methodological articles (16, 24%). More details are provided in Table 2.

The applied research articles (282) were further classified by methodological orientation and, in the case of quantitative applied research articles, also by study design. Most of these studies used a quantitative approach, and a descriptive observational design. Then the articles were grouped by study setting and participants; the majority of these studies were conducted at hospitals and clinics, and recruited patients and their caregivers in their samples (see Table 3).

Overall, non-Italian coauthors had contributed to 30% (105) of the 348 publications. The main reasons for international coauthorships were a multicenter design or sampling across countries (see Tables 2 and 3).

Table 2 – Classification of Publications (Figure 1, group B, 348) by Type of Journal, Research Topic, Type of Publication, Method, Study Design, and International Collaboration

Variable	No. of Publications(%)
Journal	
Nursing	227 (65)
Non-nursing	121 (35)
Topic	
Non-nursing	48 (14)
Nursing	300 (86)
Clinical	161 (53.8)
Philosophy, nursing theories, research methodology	25 (8.3)
Ethics	28 (9.3)
Management	37 (12.3)
Education	49 (16.3)
Type of publication, method and study design	
Applied research articles	282 (81)
Other research articles	66 (19)
“Theoretical and methodology articles”	16 (24)
Reviews	50 (76)
Narrative	7 (14)
Integrative and systematic	38 (76)
Meta-analyses and metasyntheses	5 (10)
International coauthoring	105 (30.1)

Discussion

The articles analyzed were not equally distributed among the INAs because the number of their publications resulted with variable. This variability in individual academic production is comparable with the report from McKenna (McKenna et al., 2017) on Australian nursing academics. Her sample of 100 associate professors produced from 1 to 256 articles with a

Table 3 – Classification of Applied Research Articles (282) by Study Design, Setting, Participants, and Multicenter Approach

Variable	No. of Publications (%)
Study design	
Mixed	11 (4)
Qualitative	36 (13)
Quantitative	235 (83)
Experimental/quasi-experimental	34 (14.5)
Observational/descriptive	170 (72.3)
Instrument or scale validation	31 (13.2)
Study setting*	
Hospital/clinic	164 (58.1)
Nursing home/hospice	23 (8.1)
GP/outpatients/health centers	24 (8.5)
Community	13 (4.6)
University	50 (17.7)
Other	27 (9.6)
Participants*	
Nurses	62 (21.9)
Health professionals	19 (6.7)
Patients and caregivers	169 (59.9)
Students	39 (13.8)
Others	15 (5.3)
Multicenter study	133 (47)
Italian (n = 133)	115 (86.5)
International	18 (13.5)

* Articles fitting more than one type of setting or type of participants were counted twice, so the total percentage of articles exceeds 100%.

median of 26 publications. Björn's study (Björn et al., 2008) also produced comparable results, with only half of 38 PhD nursing students with sampled publishing in peer-reviewed journals. Björn et al. suggested a link between length of career and scientific production (nursing academics with the longest career history being those with more publications to their credit). The number of publications in which the observed academics ranked as first or last authors amounted to nearly half of the total, indicating that these INAs contributed adequately to the production and diffusion of Italian research on an international scale.

Our findings provide evidence of a steady growth in publications by INAs, especially in the last few years. This positive trend in Italy's scientific production in the field of nursing appears to be consistent with reviews on nursing academics' production in other countries (Adejumo & Lekalakala-Mokgele, 2009; Björn et al., 2008; Dornik et al., 2005; Higgins & Farrelly, 2007; Huang, Ho, & Chuang, 2006; Khalaf, 2013; Li et al. 2009; Maree, Herbert, & Huiskamp, 2017; Mendoza-Parra et al., 2009; Peng & Hui, 2011; Yarcheski, Mahon, & Yarcheski, 2012; Zhang et al., 2016). Several factors inside and outside the academic world may be driving this steady growth. One factor within Italian universities is, since 2014, scientific production has been linked to a quality review process with significant consequences for department and university budgets. This

means a much greater emphasis on research and further competition in publishing, consistently with international trends (Huang et al., 2006). A concurrent external factor consists of the notable improvement in Italian nurses' level of education. The increasing numbers of nurses with Master's and doctoral degrees, seek positions and careers in research, and participate in research projects and scientific writing, as seen in other countries (Dornik et al., 2005; Higgins & Farrelly, 2007; Khalaf, 2013).

Our results indicate that most of INAs' articles were published in nursing journals. Articles published in non-nursing journals (mainly medical journals), were mostly clinical studies in medical specialties in which the INAs took more part as collaborators than as primary contributors.

The most often chosen international nursing journals are consistent with those suggested in international reviews (Adejumo & Lekalakala-Mokgele., 2009; Alhusaini et al., 2016; Borbasi et al., 2002; Cecil et al., 2006; Higgins & Farrelly, 2007; Li et al. 2009; Maree et al., 2017; Peng & Hui, 2011; Wilkes et al. 2002; Zhang et al. 2016). They have an IF ranging between 0.186 and 3.561, with higher-IF journals publishing the majority of the articles in our sample. It is worth noting that nursing journals have lower impact factors than those relating to other health care disciplines (Happell, 2008; Johnstone, 2007; Smith & Hazelton, 2008). It follows that INAs planning to publish their work will seek journals with a higher IF, including those dedicated to other disciplines. There is not always a clear relationship between an influential journal and a well-conducted study, however, and it would be wrong to assume that articles published in journals with a lower IF are necessarily of poor quality (Adams, 2009; Davidson et al., 2014).

Citations often have a very skewed distribution, such that 20% of publications account for 80% of citations (Adams, 2009; Garfield, 2006; Hack et al. 2010). Our results confirm as much: 20% of articles were cited more than 10 times and accounted for nearly 70% of all citations in our sample. The top 10 most cited articles were published in medical journals, supporting reports that publications in medical journals are cited more frequently (Oermann et al., 2008; Smith & Watson, 2016).

Articles published in Italian journals were excluded from our analyses but accounted for nearly half of our INAs' total output. By comparison, two studies on African nursing publications also found that nearly half of the research production had been published in national journals (Adejumo & Lekalakala-Mokgele., 2009; Maree et al., 2017), and a Danish study showed that Danish PhD nurses preferred to publish in their own language rather than in English (Björn et al., 2008). This tendency to submit more papers to national journals might be explained by the fact that INAs often submit their work to professional journals in which they have a position on the editorial board or serve as reviewers. Another reason for publishing in national journals could relate to language barriers

and to some INAs being unfamiliar with research methodologies, as seen in some other countries (Thompson & Clark, 2012).

Most of the articles sampled were on nursing topics, nearly half of them focusing on clinical issues (mainly in the spheres of oncology, geriatrics, and chronicity). These topics relate, to some degree, to issues considered national health priorities. Publications on primary care and health promotion, which are sensitive issues worldwide, remain marginal, however, as also reported in the international literature, with a few exceptions due to differences from one country to another (Borbasi et al., 2002; Wilkes et al. 2002; Yarcheski et al., 2012). In discussing the issue of how to reduce the publications motivated merely by a researcher's personal interests, and to prompt more investigations on the more pressing health priorities, some authors have suggested that global and national research agendas be defined (Back-Pettersson, Hermansson, Sernert, & Bjorkelund, 2008; Borbasi et al., 2002; Khalaf, 2013; Li et al., 2009). In Italy, such a debate has received only marginal attention. In fact, although most of the articles reviewed here had a clinical frame, and enrolled patients and caregivers, the tendency to focus on “endogenous topics” was clearly apparent, as in other international studies on nursing academics' scientific production (Adejumo & Lekalaka-Mokgele, 2009; Borbasi et al., 2002; Cecil et al., 2006; Higgins & Farrelly, 2007; Polit, 2009; Wilkes et al. 2002; Yarcheski et al., 2012). Significant impetus to scientific production might be given by university requirements. In Italy, continuative publication in scientific journals is a key requirement for academic tenureship. Evaluation is provided by a national independent agency (ANVUR—Agenzia Nazionale di Valutazione del Sistema Universitario e della Ricerca). Furthermore, some academics are associated with very active research groups belonging to clinical institutions and professional associations.

Nearly one third of our INAs' publications were on managerial and training issues; nurses, students, and health professionals accounted for nearly half of the participants in the studies. This may be because it is less expensive and easier to recruit such samples, or it might reflect changes in the way the nursing profession sees the health care scenario. What appears to be lacking is the nurses' perspective about clinical phenomena, and this leads to an inadequate analysis of the implications for nursing practice. It should be considered a priority for INAs to focus their studies on questions specific to their profession, in order to support evidence-based practice (Alhusaini et al., 2016; Borbasi et al., 2002; Dornik et al., 2005; Mantzoukas, 2009).

The “applied research articles” accounted for eight out of 10 of the publications sampled, and 83% of them took a quantitative methodological approach—a higher percentage than in other reports, in which the highest proportion of quantitative studies was 77% (Khalaf, 2013). The majority of the articles taking a quantitative approach had adopted an observational study design, while only a few were experimental or

quasi-experimental, as seen in previous reviews (Cecil et al., 2006; Mantzoukas, 2009). “Observational studies with a descriptive design are easier to conduct in terms of study design and feasibility. They provide useful information when describing unknown phenomena. However they are unable to infer causes and effects without passing through inferential or experimental studies.” The few experimental studies conducted could be due to nurses lacking the expertise to conduct such studies, and to the “antitrial” culture permeating the nursing world because nurses use several types of knowledge that are not amenable to experimental research methods (Mantzoukas, 2009). A qualitative approach was adopted in 13% of the 348 publications, a lower proportion than in other studies (Baldi et al., 2014; Borbasi et al., 2002; Mantzoukas, 2009; Sun & Larson, 2015; Yarcheski et al., 2012). Few systematic reviews or meta-analyses were published by INAs, despite their usefulness for the purpose of fully appraising the findings of primary research, and their essential role in evidence-based health care. It was equally hard to find studies on the development and testing of theories, in which researchers explain their own conceptualizations; such studies are fundamental to the advancement of the discipline, as the international nursing literature shows (Mantzoukas, 2009; Tahamtan et al., 2014; Yarcheski et al., 2012).

Papers published jointly by INAs and authors in other countries accounted for nearly one in three of the total, and this finding is consistent with the international literature (Dougherty et al., 2011; Higgins & Farrelly, 2007; Huang et al., 2006; Li et al., 2009; Khalaf, 2013; Tahamtan et al., 2014). Co-authorships with foreign colleagues ranged between 0 and 77% of the INAs' publications. Nearly half of the “applied research articles” involved had a multicenter design and samples recruited from more than one country.

According to Huang (Huang et al., 2006), international collaboration should contribute to the development of scientific writing thanks to a sharing of ideas and workload. This can make studies more effective and improve their quality, and increase their chances of being published too. Our results support this assumption for INAs as well, since there was a clear relationship between internationalization, quality, and number of scientific publications.

Limitations

The first limitation of our study lies in some articles might not have been retrieved by our search for publications in electronic databases: the coverage of nursing journals by Scopus and PubMed is very broad, but does not include every available journal; different authors with the same name may have been confused for a single individual; and a given author may have several author listings in Scopus, leading to these listings being erroneously considered as belonging to different individuals. Although two different databases were consulted, and the lists of publications were

checked several times to exclude homonyms, the INAs were not asked to confirm the accuracy of the publications attributed to them, so some publications may have escaped our search.

The aim of the study was to describe the INAs' scientific production and its relevance in the international literature, so only articles published in international journals with an IF were included. "Quantitative" and bibliometric measures were used to describe the publications, as well as "qualitative" variables regarding study methods and main topics. Quantitative and bibliometric measures are not the only means available for measuring the quality of academics' scientific performance, but they are the most affordable indicators of the quality of their research activity. The h-index was not included in the analysis because the focus of the study was to review and classify INAs' publications, not to assess their academic performance. In literature the h-index is described as an individual-level performance metric used in contemporary academia to measure careers in terms of publication productivity and impact. H-indexes are blunted measures that can be increased through self-citations. Furthermore, they are influenced by career length so more junior researchers are inevitably going to have a lower h-index (Davidson et al., 2014; Smith & Hazelton, 2008).

Even though the authors were anonymized, due to their small number and thanks to the search engines available, it could be possible to identify all authors with ease based on the provide data and summaries. However, it is not among the objective of the present research to carry out comparative measurements among specific universities and individual authors, in terms of productivity and quality of their publications.

Finally, the paucity of international reviews on the scientific production of nursing academics by country makes it difficult to compare the results of our study with those obtained in other countries, or even by continent.

Conclusion

The aim of the present study was to identify the contribution of INAs to the international literature. Our findings revealed that just a handful of academics were responsible for most of the publications. INAs' scientific production has been increasing over time. Their articles are published mainly in nursing journals, and there is evidence of a fair amount of international collaboration. Publications focus mostly on clinical topics regarding chronicity, but there is a persistent tendency for these academics to study nurses and other "endogenous" aspects, largely relying on quantitative methods and descriptive-observational study designs.

This study ascertained the scientific production of INAs by identifying and assessing the articles they have published in indexed international journals, thus providing a good picture of the Italian nursing

academic production since the entrance of Italian nurses into university professorship. This image can be useful for future benchmarking in Italy, and for comparisons with other countries in terms of related academic nursing scientific production. Usable criteria for such comparisons could be: bibliometric measures, such as productivity indexes, citation index, and IF. Additional measures could be those related to the internal quality of the studies published.

Supplementary Materials

Supplementary material associated with this article can be found in the online version at [doi:10.1016/j.outlook.2019.02.011](https://doi.org/10.1016/j.outlook.2019.02.011).

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