Review article: history of medicine

Historical gender gap in the authorship of the most impacted general nursing journals: a cohort descriptive study

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Abstract. Gender differentiators in the academic world are characterized by a disparity between men and women in their scientific production, as men are more favored in this area than women. The aim of the research is to evaluate any gender differences in nursing scientific production between journals in the sector with an important impact factor. The Web of Science (WoS) citation database was used to select the journals based on the impact factor and the publications of the last 5 years whose data are available, such as from 2014 to 2018. General nursing journals, in the WoS database, with an Impact Factor greater than 2 and published in English language were included in this research. The general nursing journals with an impact factor greater than 2 in 2018 identified in our study are: International journal of Nursing Studies, Journal of Advanced Nursing, Journal of Nursing Scholarship, Nurse Education Today, Nursing Outlook, Nursing Research, Worldviews on Evidence Based Nursing. In total, 2889 names of first authors were recorded in the reference years from 2014 to 2018. Of these 83.7% are female and the remaining 16.3% are male. From our data it emerges how nursing turns out to be against the trend in the field of scientific productivity compared to other disciplines. This counter tendency has its origins in the history of nursing which has always been conceived as an all-female discipline, although history has taught us how several male nurses have made their important contribution in the history of nursing.

Key words: authorship, gender role, nursing, nursing history

Introduction

In the scientific world gender discriminations are defined as an inequality between men and women in their academic production, as male researchers are more advantaged than female researchers (1). The reasons of this benefit are also imputable to their social role in families, as they can ensure less absences in their workplace than women (2).

In 2009, a study was conducted in the USA that highlighted the strong disparity between male and female gender in scientific production, to the benefit of male production(3). A similar study in the UK reported the same trend in the results. In fact, in both studies a strong gender difference was found, despite the increasing portion of women in leadership roles within medicine(4).

In another study conducted in the North America on gender authorship in scientific production over the past 35 years, the first female author's name increased from 5.9% to 29.3% and the last name from 3.7% to 19.3% , respectively(5). In parallel with these results, another study in the UK reported an increasing trend in female authorship as, by analyzing six scientific journals in the last 30 years there has been an increase in the number of female authors in both the first and the last first name(6).

Both in the UK and in the USA, which have the highest number of scientific production, the female gender is still in the minority in the academic world.

These results are even more disconcerting when compared to the number of students enrolled in the degree course in medicine, where in the USA 50% are women and in the UK they are 60%. The same studies show a higher probability of career for men than women, finding the reasons for this trend in the social role of women in her family. While the studies conclude that, although the number of women studying to become a doctor is high, in the academic world this number decreases as many women remain in the basic positions due to the numerous other commitments related to their personal sphere.

In the nursing field there are two studies of gender bias in the North of America which examined the gender of research subjects, but not authors(7,8). In fact, there is no literature of gender bias in the authorship of nursing research. In the USA in 2000, 6.9% of the nursing workforce was male(9), while in the UK 10% of the nursing workforce was male and 11% by 2008(10). In Australia, the portion of men in the nursing workforce grew slightly from 8% in 1995 to 10% in 2007(11).

In Italy, from the analysis of data from ISTAT's Continuous Survey on the Work Force, it emerges that in 2015 in Italy there were 371.000 nurses employed out of over 440.,000 registered in the registers. Of these, 367.000 work in healthcare and 4.000 in different economic activity classes. 77.7% of nurses work in hospital services. Of the 371.000 nurses, 91.000 are men and 280.000 are women. Furthermore, from a survey conducted by Almalaurea in 2015 on a population of 210.000 nursing students, he says that precariousness and unemployment affect women more than men even when women are more hyper qualified(12). In addition, motherhood is professionally damaging to women and, in a male world, mothers continue to make less careers than childless women. This represents a sign of a strong cultural and civil retreat of the country with respect to the objective of achieving equal participation of women in the work context(13).

On the other hand, the male gender turns out to be increasingly interested in those household roles and to prefer safer jobs such as the nurse or the teacher, staying at home more time. In the latest surveys on the increase in the male gender in the professorship showed that the male gender managed to become increasingly predominant in a few years, also reaching more important and more profitable positions than female nurses(14).

Historically, the nursing figure has always been associated with a female figure. Thus, it has become identified as a profession deeply embedded in the gender-based power relations of society. Nursing is an occupation established by women. It supports the stereotypical "feminine" image with traits of caring and gentles in contrast to masculine characteristics of strength, aggression and dominance (15).

The aim of the research is to evaluate any gender differences in nursing scientific production between journals in the sector with an important impact factor. Specifically, we assessed whether there are gender differences in nursing scientific production not only considering the type of journal, but also considering the economic level of development of the author's country of origin to assess how much the economic development of a country affects the scientific production of own citizens.

Materials and Methods

The research strategy

The Web of Science (WoS) citation database was used to select the journals based on the impact factor and the publications of the last 5 years whose data are available, such as from 2014 to 2018, have been taken into consideration as data concerning the year 2019 were not available.

The WoS database was used in this research. Specifically the "Incites" section of the WoS database was adopted to find specific journals for our research.

Inclusion criteria included:

- General nursing journals,
- Journals cited in the WoS database,
- Journals with an Impact Factor greater than 2,
- General nursing journals published in English language.

On the other hand, exclusion criteria included:

- Specific nursing journals,
- Nursing journals with an Impact factor lower than 2,

- Nursing journals published in other languages.

Then, the research was carried out on the websites of the editorial groups that publish the magazines identified in the research.

For each volume belonging to the reference years of our research, editorials, corrigendums and letters to publishers have been excluded. Instead, all the other study types were considered.

For all the research works identified, the name of the first author was highlighted with the aim of identifying his gender and his country of origin.

For the identification of gender and nationality, the sites of the universities and institutions where the authors carry out their research activities were used, or the Researchgate database, which also showed many of the photographs, making research even easier. When we could not trace this information in any way, we sent an email to the address indicated in the work, also explaining the reason for the request.

Finally, after collecting all the data relating to gender, year of publication and nationality, further research was carried out on the World Bank website where the names of each country were associated with its economic level. Specifically, the World Bank classifies the world's economies into four income groups, such as: high, upper-middle, lower-middle and low. This assignment is based on Gross National Income per capita calculated using their Atlas Method. This classification is updated each year on July 1st. In our research work we considered the latest income economy classification.

Data analysis

The research data was collected in an Excel sheet. Subsequently, the descriptive statistics were used to calculate the relative frequency (n) and percentages (%) of the number of authors divided by gender, year of publication, magazine and country of belonging. Finally, the chi square test was used to evaluate any gender differences between the variables considered. The SPSS program of IBM in version 20 was used to evaluate the frequencies and percentages and statistical significance. All inferential statistics values less than or equal to 0.05 were considered statistically significant.

Results

The general nursing journals with an impact factor greater than 2 in 2018 identified in our study are: International journal of Nursing Studies, Journal of Advanced Nursing, Journal of Nursing Scholarship, Nurse Education Today, Nursing Outlook, Nursing Research, Worldviews on Evidence Based Nursing.

In total, 2889 names of first authors were recorded in the reference years from 2014 to 2018. Of these 83.7% are female and the remaining 16.3% are male (Tab. 1).

Furthermore, in Table 1 it can be seen how the number of scientific papers has increased year by year. In fact, considering in total the magazines selected for our study, it can be seen that the number of scientific papers has increased from 492 research papers in 2014 to 682 papers in 2018.

Furthermore, always in Table 1, the number of scientific papers is also different among the journals considered: the International Journal of Nursing Studies has published 756 research papers in 5 years, while the Nursing Research Journal has published 194 works in 5 years.

Considering the gender differences in the international scientific production of nursing, it is noted that there is no statistical significance considering the years of publication (p=0.249). Instead, the gender difference is statistically significant considering the selected journalss (p=0.021). This means that there is no gender difference in the number of scientific publications over the years, that is, that men have published less and less than women in the years considered and that this gender difference is statistically significant in all general nursing reviews with an impact factor greater than 2.

Moreover, by associating with each first author name in addition to its nationality, it was possible to associate the economic level class to each nation considering the World Bank classification.

As a result, only 3 authors come from low-income countries, 17 authors from lower-middle income countries, 251 authors from upper-middle income countries and 2618 authors from high income countries.

Furthermore, the gender difference is statistically significant (p=0.027) considering the two sexes and the economic level of belonging as variables.

Table 1. Frequencies of nursing studies among the journals considered.

Parameter	Frequency (n)	Percentage (%)	X^2 test p value*
Gender:			
Female	2417	83.7	----
Male	472	16.3	
Total	2889	100	
Publication year:			
2014	492	17	X^2=0.246
2015	589	20.4	p=0.249
2016	558	19.3	
2017	568	19.7	
2018	682	23.6	
Total	2889	100	
Journals:			
International Journal of Nursing Studies	756	26.2	X^2=0.027
Journal of Advanced Nursing	462	16	p=0.021*
Journal of Nursing Scholarship	296	10.2	
Nurse Education Today	578	20	
Nursing Outlook	368	12.7	
Nursing Research	194	6.7	
Worldviews on Evidence Based Nursing	235	8.1	
Total	2889	100	
Income economies:			
Low-income economies	3	0.1	X^2=0.115
Lower-middle income economies	17	0.6	p=0.027*
Upper middle income economies	251	9.4	
High income economies	2618	89.9	
Total	2889	100	

*p<0.05 is statistically significant.

Furthermore, in Table 2 all the countries to which the authors belong are highlighted, always divided according to their genre (Tab. 2). It is interesting to note how in the three Countries with a low-economy income, such as: Ethiopia, Malawi and Nepal, the trend in scientific nursing production remains unchanged. In all three countries the only work published in one of the journals included in the research reports a woman as the first author.

Discussion

Although our study, considering scientific productivity, finds itself at odds with the world of current literature since the female gender manages to obtain better results in the field of nursing scientific productivity(16). In fact, numerous studies in the literature report a gender disparity in the number of male authors decidedly higher than the female ones in the academic field for many disciplines, medical and non-medical(17-19).

In the nursing field, this trend is in against trend as the female gender is predominant and in Countries with a poor economy. Therefore, gender disparity exists in the nursing field, but in contrast to other disciplines, medical and otherwise. This against trend found not only in our results but also in numerous studies in the literature could be explained by the predominance of the nursing profession for women. As such, nursing

Table 2. Geographic distribution of nursing studies

Country	Female(n)	Male(n)	Total (%)
Albania	1	0	1 (0)
Aruba	4	7	11(0.4)
Australia	244	53	297(10.3)
Austria	3	1	4(0.1)
Azerbaijan	0	1	1(0)
Bahrain	1	0	1(0)
Belgium	30	15	45(1.6)
Botswana	1	0	1(0)
Brazil	5	1	6(0.2)
Canada	134	24	158(5.5)
Chile	1	0	1(0)
China	136	16	152(5.3)
Cyprus	2	3	5(0.2)
Colombia	0	1	1(0)
Korea, Dem. People's Rep.	0	1	1(0)
Croatia	1	1	2(0.1)
Denmark	21	2	23(0.8)
Egypt	1	1	2(0.1)
Ethiopia	1	0	1(0)
Philippines	2	2	4(0.1)
Finalnd	46	1	47(1.6)
France	10	3	13(0.4)
Germany	16	15	31(1.1)
Ghana	1	0	1(0)
Japan	16	3	19(0.7)
Jordan	5	4	9(0.3)
Greece	1	3	4(0.1)
India	3	0	3(0.1)
Indonesia	2	0	2(0.1)
Iran	7	3	10(0.3)
Ireland	27	11	38(1.3)
Iceland	7	0	7(0.2)
Israel	21	1	22(0.8)
Italy	29	27	56(1.9)
Kazakhstan	0	1	1(0)
Lebanon	10	3	13(0.4)
Malawi	1	0	1(0)

(continued)

Table 2 ***(continued)*****.** Geographic distribution of nursing studies

Country	Female(n)	Male(n)	Total (%)
Malaysia	3	2	5(0.2)
Malta	1	0	1(0)
Papua New Guinea	1	0	1(0)
New Zeland	13	7	20(0.7)
Nepal	1	0	1(0)
Norway	25	5	30(1.0)
Holland	68	12	80(2.8)
Oman	2	5	7(0.2)
Pakistan	3	0	3(0.1)
Palestine	1	0	1(0)
Poland	3	1	4(0.1)
Portugal	5	3	8(0.3)
Czech Republic	4	0	4(0.1)
Serbia	3	0	3(0.1)
Singapore	15	2	17(0.6)
Slovakm Republic	1	0	1(0)
Slovenia	4	2	6(0.2)
Spain	87	30	117(4)
South Africa	8	0	8(0.2)
Korea, Rep.	45	4	49(1.7)
Sudan	1	0	1(0)
Sweden	74	7	81(2.8)
Switzerland	12	8	20(0.7)
Thailand	5	0	5(0.2)
Taiwan, China	31	3	64(2.2)
Tasmania	1	0	1(0)
Turkey	34	3	37(1.3)
United Kindgom	240	87	327(11.3)
United States of America	904	87	991(34.3)
Venezuela, RB	0	1	1(0)
Total	2417	472	2889

profession remains stereotyped as a female occupation(20-22).

In fact, the concept of female profession is embodied in society and men who choose nursing as a career risk challenging traditional gender-defined roles and stereotypes (23).

This is also due to the low remuneration that prevented the man from providing financially for the expenses of his family.

However historically men have played an important role in organized nursing from 330 A.D. during the Byzantine Empire. Moreover, military, religious

and lay orders of men known as nurses have a long history of caring for the sick and injured during the Crusades in the 11th century (24). During the Civil war in the USA men served as nurses. In Germany, during the Prussian war 1870-1871 John Simon founded the experimental field hospital in Germany.

The first male nursing school was founded by-Darius Odyen Mills in 1888 in the Bellevue Hospital in New York city, America. This school educated and trained only psychiatric male nurses (25).

Despite the fact that society has forgotten the male contribution to nursing, stereotyping it only with the feminine image and the perception of the male nurse as an anomaly. While nursing is almost all female, there is some evidence of a male predominance in senior positions. This trend is not reflected in the gender bias in authorship. Moreover, an important methodological obstacle to understand gender disparities in the academic world has been the difficulty to reconstruct full publishing careers for scientists of both gender across the several academic population. Consequentially, many of the available gender difference studies are based on case studies limited to specific countries, disciplines and institutions. It is therefore difficult to compare and generalize the results on the academic career possibilities between States of different continents as socio-cultural and legislative contexts are different. This is why in our study we have chosen to consider as a comparison element the genre of the first author of the authorship of magazines with a high impact factor. In literature other studies have adopted the same comparison factor considering also longer periods of time with a lower number of journals.

It would be desirable in future studies to also compare the authorship with the academic title of the nurse authors, highlighting any gender bias.

Our study wanted to photograph the gender situation in the scientific nursing world. The female gender in the reference years 2014-2018 appears to be predominant in authorship as the first name in the magazines considered.

Further studies are desirable to understand if this predominance persists in the working world.

Conclusion

From our data it emerges how nursing turns out to be against the trend in the field of scientific productivity compared to other disciplines. This counter tendency has its origins in the history of nursing which has always been conceived as an all-female discipline, although history has taught us how several male nurses have made their important contribution in the history of nursing.

Further studies may be necessary to confirm this countertendency, such as for example expanding the range of Impact Factor values to be considered, or using other library references with other databases to expand the number of authorships and verify whether this countertendency can still be confirmed and if so the historical stereotype of Nursing connected to the female figure may persist over time.

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