Original Article

The Survey of Collaborative Coefficient of Article Authors in "Iranian Journal of Pathology" Since 2006 to 2012

Masoumeh Heidari[1], Zeinab Safavi[2]

1. Dept of Midwifery, Shahed University, Tehran, Iran
2. Master of knowledge and Information Science, Jadda Public library, Tehran, Iran

ABSTRACT

Background and Objective: **Co-authorship on writing articles is one of the indicators of reliability in scientific articles. Due to the lack of information regarding to the rate of participation of the authors of articles in the "Iranian Journal of Pathology" this research with the aim of the survey of collaborative coefficients of article authors in this Journal from 2006 to 2012 was performed.**

Materials and Methods: **A cross sectional research was performed. The study population consisted of all articles published in the years studied. Totally 288 printed articles in terms of number and sexes of authors were recognized and collaborative coefficient between the authors was calculated. The data were collected by referring to the original articles and Excel software was used for data entry. Data analysis with using descriptive statistics and collaborative coefficient formula was worked out.**

Results: **Altogether 288 articles had 1078 authors. Average number of authors was 3.75 ± 1.65 and the maximum number of articles was written by three authors. Collaborative coefficient in 2008 was seen as higher ratio of collaboration between article authors. Average collaborative coefficient of authors in research years was 0.69 which demonstrated willingness to cooperate between authors of this journal.**

Conclusion: **It seems that the collaboration between article authors of pathology is high. However considering that participation lead to increase the quality of research activities, encourage researchers to collaborate in scientific research can enhance the quality of articles.**

Keywords: **Collaborative Coefficients, Iranian Journal of Pathology, Paper**

Received: 12 August 2012
Accepted: 09 January 2013
Address Communications to: Mrs. Masoumeh Heidari, Deparment of Midwifery, shahed university, Tehran, Iran.
Email: ma_heidari49@yahoo.com

Introduction

Due to the growing interdisciplinary fields of science that makes scientific more dynamic in recent decades, scientific researchers in science have tried to do a joint researches because of intellectual participation can make use of each other's expertise (1). Scientific collaboration between writers in the early 19th century by French chemists was begun and grew slowly until the First World War (2). Scientific collaboration is a special place in the development process of scientific research achievements and scientific development requires collaboration of all researchers and scientists. Thus, cooperation is one of the mechanisms of scientific development (3) so that nowadays corporation of researchers in producing scientific articles have a complex structure (4). The relationship between collaboration and productivity, depending on the number of partners, great number of partners, leads to higher productivity. In fact, the major trends in collaboration are to increase co-authorship (5).

Today, the use of quantitative methods in the evaluation of scientific literatures has created a great revolution in variety of studies (6). Many studies concerning the scientific collaboration between authors of articles in various journals have been done that all shows in recent year co-operation and communication between researchers are increasing (7-14). There is evidence that shows there is a significant correlation between collaboration and high quality of scientific literatures (15). Scientific collaboration is the demonstration of quality research partners and many studies have shown to enhance scientific cooperation and scientific cooperation is one of the main characteristics of research that is changing rapidly (16). Advantages of scientific cooperation are access to multiple ideas and sources, exchange of information especially between different disciplines, learning new skills, greater efficiency, higher quality of results, and upgrading the quality of the articles (17).

Since so far there is no research published in scientific collaboration of researches in the "Iranian Journal of Pathology" and regulation emphasis on improving of faculty members by collaborative of authors in research works and writing articles, we decided to use quantitative methods to evaluate collaboration between the authors in this journal. Therefore, this study aimed to determined collaborative coefficients of article authors in the "Iranian Journal of Pathology" since 2006 to 2012 was performed.

Materials and Methods

In this study descriptive-cross sectional study, 288 articles published in scientific- research "Iranian Journal of Pathology" in 2006 to 2012 in terms of the number of authors, the average number of authors, the frequency distribution of authors according to sex and collaborative coefficients between authors were studied. At first, the number of co-authors in each journal articles according to the date of publication were extracted then wrote preliminary table. Then table were arranged according to publication year to development process survey well.

The descriptive statistics and mean was used for statistical calculations. The following formula was used to calculate collaborative coefficients of authors.

$$CC = 1 - \frac{\sum_{(j=1)}^{k} \left(\frac{1}{j}\right) F_j}{N}$$

In this formula:

CC = Coefficient of teamwork (Collaborative Coefficient)

F_j = Number of research articles have been published in the specified period of time with j author

j = Written articles (first author, second author, third author, and ...)

N = Total number of research articles that have been published at the same specified period of time

K = Maximum number of authors for each author (18).

Collaborative coefficient is a number between 0 and 1, whatever the number is closer to 1 indicates more collaboration between authors.

Results

Twenty eight issues of journal in 2006 to 2012 were studied. The findings showed that 288 articles have been published during the research and 1078 authors had written them. Mean and standard deviation of authors was 3.75 ± 1.65 (Table 1). During the years 2006 to 2012 a total of 1,078 authors had participated in the" Iranian Journal Pathology" that 658 (61%) were male and 420 (39%) were female (Table 2).

Table 1- Number of article authors according to research years

Years	Number of articles	Number of authors	Average number of authors in each article
2006	36	122	3.38±1.22
2007	39	151	3.87±1.97
2008	45	188	4.17±1.7
2009	40	158	3.95±1.6
2010	39	149	3.82±1.63
2011	43	151	3.51±1.63
2012	46	159	3.45±1.62
Total	288	1078	3.75±1.6

Table 2- Frequency distribution of authors according to sex

Years	Men		Women		Total	
	Value	Percentage	Value	Percentage	Value	Percentage
2006	81	66.4	41	33.6	122	100
2007	91	60.3	60	39.7	151	100
2008	107	57	81	43	188	100
2009	98	62	60	38	158	100
2010	87	58.4	62	41.6	149	100
2011	93	616	58	38.4	151	100
2012	101	63.5	58	36.5	521	100
Total	658	61	420	39	1078	100

Figure 1 shows most articles had written by 3 authors.

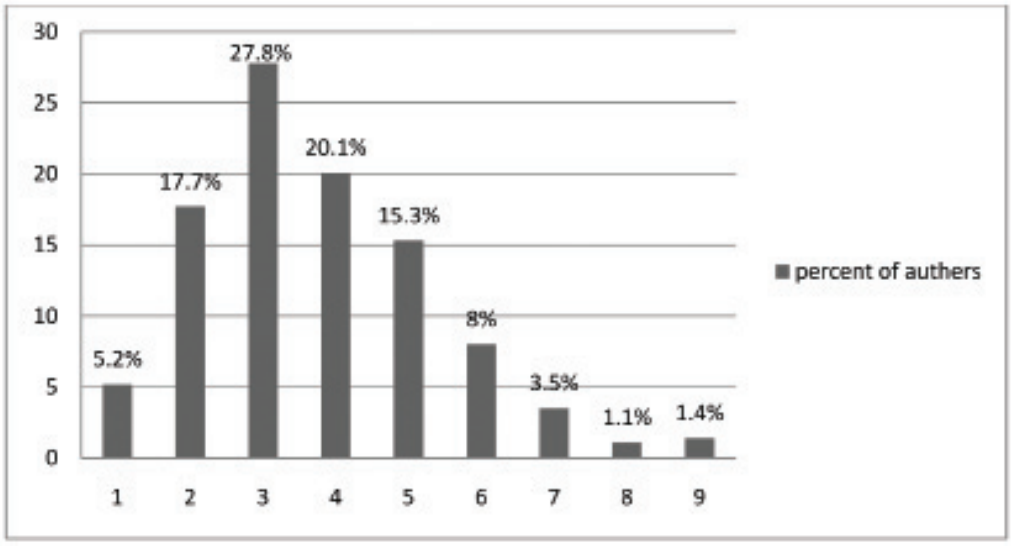

Fig. 1- Frequency distribution of articles according to number of authors

Findings showed that collaborative coefficients of article authors in the " Iranian Journal of Pathology" since 2006 to 2012 were 0.69, which represents high collaboration of authors in this journal (Table 3).

Table 3- Collaborative coefficient of article authors according to year

Years	Collaborative coefficients of authors
2006	0.69
2007	0.71
2008	0.81
2009	0.67
2010	0.66
2011	0.66
2012	0.68
Average	0.69

Discussion

Results showed that the number of authors was 3.75 ± 1.65 that have fluctuated during the 7 years, so that in 2008 the largest number of authors (4.17 ± 1.7) and in 2006, the lowest number of authors (3.38 ± 1.22), had written papers. Most of articles had been written by 3 authors. Overall, number of authors increased from 1 to even 9 authors during 7 years. Results of another study in Iran using the web of science database between 2000 and 2006 showed that most articles had 2 and 3 authors (19). A research on the authorship networks of Persian articles in the field of ibrary and information science, Psychology, and Management in ISI database between 2000 and 2009 showed that the highest participation in writing articles was between 2 and 3 authors (15). In a survey that was performed in 2011 with title of citation analysis and collaboration pattern of six Iranian English journals in Engineering Area Indexed in Islamic World Science Citation Center, the results showed that in 1052 articles, the average contribution to the authors for each article was nearly 3 (20). In a study on 83 articles published in scientific journals - College of Nursing – Midwifery in Tehran, Iran and Shahid Beheshti was performed in 2008, showed mean and standard deviation of authors per article was 3.8 ± 1.2 and minimum number of authors was 1 and maximum was 7 (21). A research on Journal of Research in Medical Sciences showed that average number of authors was 4.08 ± 1.94 and most articles had 3 authors (22). In the research of the survey of collaborative coefficient of article authors in Journal of Kumesh in 1999 to 2010; an average authors in 440 articles of this journal was 3.6 (23). Comparing the results of different studies showed that participation of authors in the Journal of Pathology is relatively high.

In this study it was shown that the rate of women's participation in the production of articles was less than men. So that among 1078 authors, 658 (61.03%) were men and 420 (38.96%) were women and in 2008 the highest participation was of women (43.08) in writing articles. The research of Journal of Ahvaz Medical Science University showed that the participation of women was less than men (24). Zandi's research also showed that 92% of articles in the Journal of Shiraz University of Social Science were for males (25). Role of women was lower than men, but their activity over the years had been upward (26). The low number of women may be because of the low number of female faculty members in comparison with men. Although it is expected the participation of women is an incremental process during the times, however, this progress has been slow in some journals. In this research, collaborative coefficient of article authors was 0.69 that is a high coefficient and the results showed collaborative coefficient of authors in this journal in 2008 had been the highest value of the coefficient (0.81) and in 2010 and 2011 had been the lowest (0.66). The coefficient in the Journal of Ahvaz Medical Sciences was 0.4 which is the average rate (24). During a research on published articles in the LIS field in "Emerald" database in 2003, the collaborative coefficient of article authors had been 0.08 (27). In a similar research in collaboration with researchers at the medical science of Esfahan University on research projects

in 2001 to 2006; collaborative coefficient was 0.35 (28). Also in other research collaborative coefficient of authors who had presented articles in the Conferences of medical science was announced 0.22 (29). In the Journal of Research in Medical Sciences collaborative coefficient was 0.71 (22) and in the Quarterly Journal of Health Information Management was 0.67 (30). Comparing the present results with other studies in the field of medical and non-medical journals have shown that collaborative coefficient of authors in this publication is desirable. Therefore, according to the positive relationship between the number of authors in an article and citation impact of article (31), collaboration in research projects and writing articles should be promoted by the authorities research and incentive ways to encourage researchers to work in groups be considered.

Although in recent years according to the regulations that emphasis on collaboration in research projects and allocate more points to articles with more authors, willingness for collaboration has been increased among researchers, however, because of lack of awareness about the importance of this issue, sometimes we have lower level of collaboration.

One of the limitations of this study was that we just examined the rate of co-authorship by quantitative approach but we did not know all of authors who had written their name in articles really had a corporation or by other reasons their name had been mentioned in articles.

Conclusion

It seems that collaborative coefficients of article authors in the "Iranian Journal of Pathology" is desirable. However, according to the increasing importance of scientific collaborative we suggest that authorities in research centers lead researchers to do works corporately.

Acknowledgement

The authors declare that there is no conflict of interest.

References

1. Osareh F. Collaboration in Astronomy knowledge production: A case study in Science Direct from 2000-2004. Proceeding of the 10th International Conference on Scientometrics and Informatics. 24-28 July 2005. Stockholm, Sweden.

2. Osareh F. Higher Education Research collaboration between Iran & UK. Proceeding of COLLINET Meeting Extra Session in conjunction with 10th ISSI Conference, 28 July 2005. Stockholm, Sweden.

3. Noruzi A, Velayati KH. Collaborative Research: Sociology of Scientific Collaboration. Tehran. Chapar 2009:25-30. (Text in Persian).

4. Shiri R, Fadaei GH. Scientific cooperation in medical on type one universities in national and international level based on the documents indexed in the ISI database between 2004 and 2008. Research on Information Science and Public Libraries 2011; 17(3):455-75. (Full Text in Persian).

5. Harrison Bahr A, Zemon M. Collaborative authorship in the journal literature::perspectives for academic. Librarians who wish to publish. College and research libraries 2000; 61(5):419-20.

6. Dayani MH. Articles and writing in a letter of Iranian Library Association. J Social Sci Humanities Shiraz Univ1986; 12:38-48. (Full Text in Persian).

7. Kariman Mazidi MA. Source citation analysis of master dissertations irrigation Shahid Chamran University, Tehran, Shiraz and Mashhad Ferdowsi 1988-1998. [Dissertation]. Shiraz: University of Shiraz 1999. (Text in Persian).

8. Nazari F. Citation behavior of authors of scientific papers Journal of Agriculture Faculty of Agriculture, Shahid Chamran University in 1975-1998. [Dissertation]. Ahvaz: Islamic Azad University, Science and Research Branch 2000. (Text in Persian).

9. Osareh F, Marefat R. Iranian researchers' participation in global knowledge production in Medline (interdisciplinary field of science and medicine). Rahyaft 2005; 357:39-48. (Full Text in Persian).

10. Parsaei Mohammadi P. Descriptive analysis and citation of the journal Psychology and Educational Sciences, Shahid Chamran University, during years of 1972-2004. [Dissertation]. Ahvaz: Shahid Chamran University 2006. (Text in Persian).

11. Buttlar L. Information Sources in Library and Information Science Doctoral Research. Library & Information Science Research 1999; 21(2):227-45.
12. Tiew WS, Kaur K. Citation Analysis of Journal of Natural Rubber Research 1988- 1997. Malaysian Journal of Library and Information Science 2000; 5(2):45-6.
13. Hayati Z, Didegah F. International scientific collaboration researchers during 1998-2007. Library Hi Tech 2010; 28(3):433-446. (Full Text in Persian).
14. Hart RL. Collaborative publication by University librarians: An exploratory study. Journal of Academic Librarianship 2000; 26(2):94-9.
15. Rahimi M, Fattahi R. Scientific cooperation and production of information: A joint scientific concepts and production patterns in common. Journal of Book 2007; 71(2):238-45. (Full Text in Persian).
16. Hariri N, Nikzad M. Co-authorship networks of Iranian articles in library and information science, psychology, management and economics in ISI during 2000- 2009. Information sciences and technology 2011; 26 (4): 825-44. (Full Text in Persian).
17. Helena B. Studying research collaboration: A literature review. Sprouts: working papers on information system. SPROUTS 2010; 10(3) 1-16.
18. Ajiferuke I, Burell Q. Collaborative Coefficient: A Single Measure of the Degree of Collabortion in Research. (A. H Farajpahlou, Translator). Information sciences and technology 2007; 23(1 & 2):169-83.
19. Osareh F, Norouzi Chakoli AR, Keshvari M. Co-authorship of Iranian Researchers in Science, Social Science, Art and Humanities Citation Indexes in the Web of Science between 2000 and 2006. Information sciences and technology 2010; 25(4):573-595. (Full Text in Persian).
20. Ghane MR, Rahimi F. Citation Analysis and Collaboration Pattern of Six Iranian English Journals in Engineering Area Indexed in Islamic World Science Citation Center. Information sciences and technology, special issue: scientometrics 2011; 159-75. (Full Text in Persian).
21. Heidari M, Valaie N, Azizi F. The evaluation of accuracy of article writing in scientific journals of nursing-midwifery in Tehran. Journal of Research in Medical Sciences 2011; 35(1):1-5. (Full Text in Persian).
22. Heidari M. Safzvi Z. The survey of Collaborative Coefficient of article authors in "Journal of Research in Medical Sciences" since 2007 to 2011. Journal of Research in Medical Sciences 2112; 36(2):1-5. (Full Text in Persian).
23. Marefat R, Saberi M. The survey of Collaborative Coefficient of article authors in journal of Kumesh in 1999 to 2010. Journal of Kumesh 2012;13(3): 279-85. (Full Text in Persian).
24. Zare F, Karbalaei M, Baji F, Zahedian M. Group participation and major issues of Journal of Medical Sciences of Ahwaz Jondi Shahpur medical science university. Health Information Management 2006; 11(2):20-4. (Full Text in Persian).
25. Zandi F. Citation survey of Journal of Social Science and Humanities Shiraz University in 1987-1996 [Dissertation]. Ahvaz: Shahid Chamran University of Ahvaz 1999. (Text in Persian).
26. Osareh F. The growth and development of scientific productivity of Iranian physicians in Medline from 1976-2003, Held in: In the Proceeding of the International Conference on Geometrics and Scientometrics, Roorkee, India 2-5 March 2004.
27. Danesh F, Abdolmajid AH, Afshar M, Musavifar S, Farhadi F. Correlation between knowledge production and cooperation rate among Library and Information Scientists in the world. Information sciences and technology 2009; 1(25):5-22. (Full Text in Persian).
28. Danesh F, Abdulmajid A, Rahimi A, Babaie F. Collaboration Rate among Researchers in Research Center of IUMS in Carrying out Research Projects. Health Information Management 2009; 6(1):52. (Full Text in Persian).
29. Ghahnaviyeh H, Danesh F. The Collaboration Rate among researchers in the production of papers presented at national conferences of new medical and paramedical sciences in Isfahan University of Medical Sciences. Health Information Management, Special Issue 2011; 7:565. (Full Text in Persian).
30. Amanollahi A, Abolghasem Gorji H, Sarikhani L. Quantitive view to scientific journals published in Journal of health management scince 2005 to 2010. Journal of health management. 2010; 44(4):6-10. (Full Text in Persian).
31. Franceschet M, Costantini A. The effect of scholar collaboration on impact and quality of academic papers. Journal of informetrics 2010; (4):540–53.