

Characterizing the Dissemination of “Bibliometrics” in Brazilian Biomedical Journals from 1992 to 2007.

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Introduction

The analysis of dissemination (dispersion, diffusion) of contents in periodicals, such as authors, texts or journal citations, the appearance of themes, terms, techniques, methods, institutions, etc. can be used for bibliometrical characterizations of contents distribution state or for scientometric evaluations of units of analysis related to it. Concentration, dispersion or diffusion indicators are generally employed in dimensioning authors or journals' geographical distribution as by Godin (1998), Kortelainen (2001) and other studies cited by Frandsen (2005).

Rowlands (2002) proposed a journal diffusion factor (JDF) later adjusted by Frandsen (2004) constituting a new JDF as a complementary tool for evaluation of journals' impact. On the other hand, in a recent publication Rummler (2008) presents an algorithm for analysis of contents dissemination in journals. The identification of four properties of dissemination dimensioned by coefficients based in a “law of contents distribution in periodicals” and the composition of an index of pondered dissemination (IPD) are particularities of this algorithm. The ponderability expressed by IPD represents hierarchical levels differences between bibliographic elements (journals, volumes, issues, articles) involved. Its application in the present study aims to characterize the dissemination of “bibliometrics” in Brazilian journals not specialized in science of information.

Methodology

The study consists in the analysis of the distribution of the subject “bibliometrics” in Brazilian journals indexed in Medline and Lilacs, characterizing the chronological evolution of its dissemination.

The identification of the articles was made accessing the above mentioned data bases on January, 7 of 2009 from <http://bases.bireme.br/bin/wxislind.exe/iah/online/> using bibliometrics as subject descriptor.

The study examined four periods of publication: P1 (1992-1995), P2 (1996-1999), P3 (2000-2003), P4 (2004-2007). The references of the articles published in each period were used to quantified the number “j” of journals, “v” of volumes and “i” of

issues involved, and the number “a” of articles that enclose the subject “bibliometrics”. These numerical data constitutes the co-ordinates for the graphic representation of the “dissemination polygons”. The orthogonal representation becomes from the fact that in situation of maximal dissemination the distances a-i, i-v, v-j and j-a are equal. The same occurs in a situation of minimum dissemination ($a = i = v = j = 1$). The graphic makes apparent relative differences in temporal evolution related to each of the dissemination properties (spreading, periodicity, expansion and penetrability). The parameters a, i, v and j were used to calculate the normalized and pondered coefficients dimensioning the referred properties. The deductions of the respective formulas, based on geometrical and mathematical properties, are explained in the article of Rummler (2008). The mean of those coefficients corresponds to the IPD (index of pondered dissemination). Differences between periods will be expressed in terms of percentage referring each coefficient (property) and the IPD.

Results and considerations

Figure 1 shows the quantities of journals, volumes, issues and articles embracing “bibliometrics” that composes the dissemination polygon of each period. The first quadrant of the figure corresponds to spreading, determined by relations between the quantity of issues and articles containing the subject bibliometrics. The second quadrant relates to the quantity of issues and volumes, corresponds to periodicity. The third quadrant represents expansion, determined by relations between the quantity of journals and volumes. The fourth quadrant, relates to the number of journals and articles, corresponds to penetrability.

The calculated coefficients of spreading (CSp), periodicity (CPr), expansion (CEX) and penetrability (CPe) corresponding to period P1 are equal to 2.00. The values corresponding to P2 are respectively: 7.81; 7.00; 7.00 and 7.81.

To P3: 42.78; 35.83; 24.83; 26.26. To P4: 113.79; 82.12; 47.23 and 51.48. The consequent calculated IPDs, respective to P1, P2, P3 and P4 are: 2.00; 7.40; 32.42 and 73.65.

The greatest contribution to the growth between P1 and P2 comes from the increase of 290.50% in the

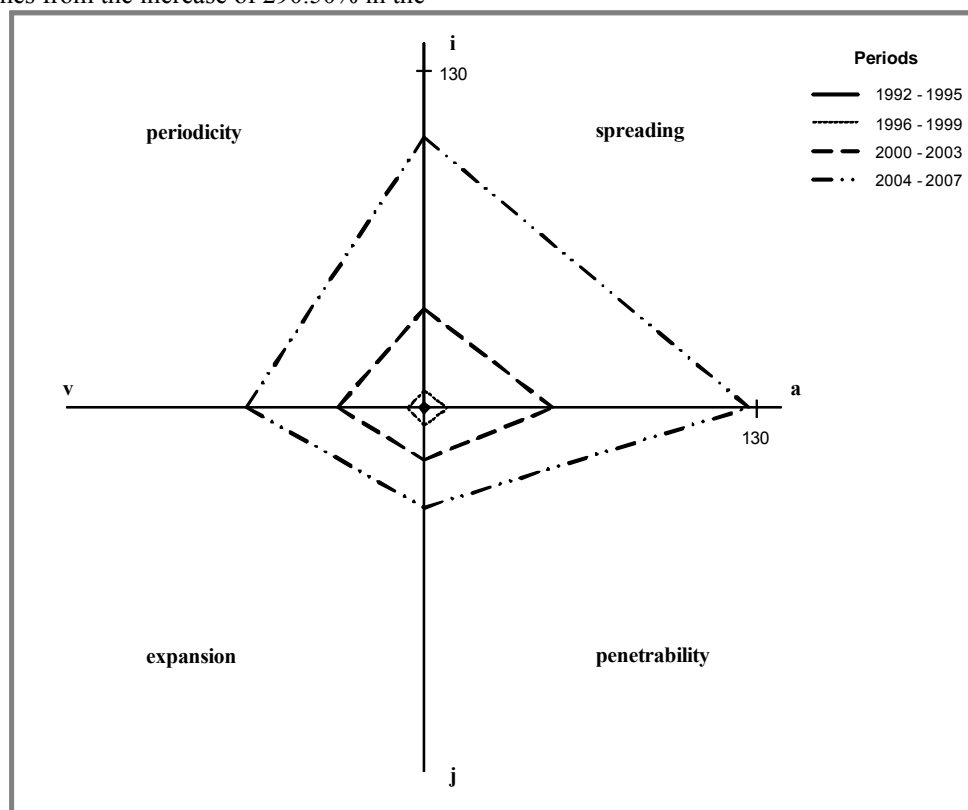


Figure 1. Dissemination polygons of “bibliometrics” in Brazilian biomedical journals in four periods. (j-v-i-a, are the quantities of journals-volumes-issues-articles involved.)

coefficients of spreading and penetrability, followed by the increase of 250.0% in the coefficients of periodicity and expansion. In the growth of P2 to P3: CSp(447.7%)-CPr(411.8%)-CEx(254.7%)-CPe(236.2%). In the growth of P3 to P4: CSp(165.9%)-CPr(129.1%)-CPe(90.2%) - CEx(96.0%). Thus, the total increase of IPD from P1 to P4 is 3582.5%.

Despite a renewed interest in bibliometrics occurring in Brazil since 1990 (Araújo, 2006) the resulting chronological profile shows a delayed presence in Brazilian journals reached by the present study, while also a expressive growth in its dissemination since 1996 reflecting adherence to knowledge production in the biomedical area.

In spite of a high number of journals indexed in the referred data bases, relatively few of them showed bibliometrics. Meantime, considering the advance by using scientometrics to evaluate scientific productivity, belonging to different Health areas, it is possible that the following periods will show advances in IPD characterized by progressive advances in penetrability, spreading, periodicity and expansion of the subject bibliometrics conjugating its major dissemination in Brazilian publications of Health areas.

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