

Periódicos nacionais em Fonoaudiologia: caracterização de indicador de impacto***

Brazilian Scientific Journals in Speech-Language and Hearing Science: impact indicator

Heliane Campanatti-Ostiz*

Claudia Regina Furquim de Andrade**

*Fonoaudióloga. Mestre em Semiótica e Linguística Geral pela Faculdade de Filosofia, Letras e Ciências Humanas da Universidade de São Paulo. Presidente da Pró-Fono Produtos Especializados para Fonoaudiologia. Endereço para correspondência: Rua Gêmeos, 22 - São Paulo - SP - CEP - 06473-020 (campanattiostiz@profono.com.br).

**Fonoaudióloga. Professora Titular. Departamento de Fisioterapia, Fonoaudiologia e Terapia Ocupacional da Faculdade de Medicina da Universidade de São Paulo.

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Abstract

Background: global value of scientific papers published in national journals of the Brazilian Speech-language and Hearing Science analyzed through the Impact Factor (IF). Purpose: to analyze part of the Brazilian Speech-Language and Hearing Science through its scientific journals: characterization of the impact indicator – in this case the Impact Factor (IF). Seven national Speech-language and Hearing Science journals (1986/2001) registered in the Brazilian Institute of Information in Science and Technology (Ibict) and with a given International Standard Serial Number (ISSN) were analyzed. In order to calculate the IF of the scientific journals, the lists of bibliographic references of the published papers were consulted and the original formula of Garfield was used, adapting it to the seven journals. Bibliographic references cited in the research papers, in the case studies, in the review and update articles were considered for analyses. Researches which were cited in the summaries like letters to the editors; editorial, abstracts, commentaries and others were excluded. A total of 9,334 bibliographic references of 549 papers were analyzed, excluding self-citations of authors. It was observed that the resulting IFs revealed practically null values. The obtained results demonstrate that the Brazilian Speech-language and Hearing Science needs to develop a few aspects of its editorial and scientific processes – the researches of the Brazilian Speech-language and Hearing Science are being lost, making it necessary for the editors to raise the access and visibility of their journals and for the speech-language and hearing scientists to cite the work of their antecessors and national partners. According to the obtained data, for the Brazilian Speech-language and Hearing Science, the publication of 11.9 papers is necessary for only one of these papers to be cited in another research. It is observed that the IFs of the Brazilian Speech-language and Hearing Science, among these seven journals, have risen since 1999, suggesting a development of this Science. The follow up of this research, analyzing the years subsequent to 2001, is necessary in order to verify the real raise of the impact of these articles.

Key Words: Speech-Language and Hearing Sciences; Periodicals - Statistics & Numerical Data; Databases; Bibliometrics; Impact Factor.

Resumo

Tema: valor global dos artigos científicos publicados em periódicos nacionais da Fonoaudiologia brasileira por meio do cálculo de Fator de Impacto (FI). Objetivo: conhecer parte da Fonoaudiologia brasileira à luz de seus periódicos científicos: caracterização de indicador de impacto - aqui, o FI. Foram analisados os sete periódicos nacionais de Fonoaudiologia (1986/2001) registrados no Instituto Brasileiro de Informação em Ciência e Tecnologia (Ibict) e, portanto, já possuidores do *International Standard Serial Number* (ISSN). Para se calcular o FI dos periódicos, as listas de referências bibliográficas dos artigos publicados foram consultadas e a fórmula original de Garfield foi aplicada nos sete periódicos pesquisados. Foram consideradas para esta contagem as referências bibliográficas constantes nos artigos de pesquisa, de relato de caso, de revisão de literatura e de atualização. Foram excluídos os trabalhos descritos nos sumários dos periódicos como cartas ao editor; editorial; resumos; comentários e outros. Desta forma, foram analisadas as 9.334 referências bibliográficas dos 549 artigos analisados nos sete periódicos, excluindo-se as autocitações de autores. Pela análise dos dados, observou-se que os FIs resultantes mostraram valores praticamente nulos. Conclusões: os resultados apresentados demonstram que a Fonoaudiologia brasileira precisa desenvolver alguns aspectos em seus processos de difusão científica - as pesquisas da Fonoaudiologia brasileira estão se perdendo, sendo necessário que os editores aumentem o acesso e a visibilidade de seus periódicos e os fonoaudiólogos brasileiros citem os trabalhos de seus antecessores e parceiros nacionais. De acordo com os dados encontrados, para a Fonoaudiologia brasileira fazer necessária a publicação de 11,9 artigos para a citação de apenas um destes artigos. Observa-se que os FIs da Fonoaudiologia brasileira, entre estes sete periódicos, aumentaram a partir do ano de 1999, sugerindo um amadurecimento desta Ciência. A continuação desta pesquisa nos anos subsequentes a 2001 é necessária para a possível verificação do real aumento do impacto destes artigos.

Palavras-Chave: Fonoaudiologia; Revistas - Estatística & Dados Numéricos; Bases de Dados; Bibliometria; Fator de Impacto.

Introduction

Price in his book of 1976 makes considerations about the scientometric indicators. According to this author these indicators may help to measure each nation's contribution to the world's research corpora, geographically place them according to authors and subjects and measure the growth of science.

Swartzman (1984) wrote that the History of Science can only be really understood if it is submitted to the same observation and interference methods that it applies to the study of natural and social phenomena. In other words, if it is constituted by an empirical Science of Science.

Nowadays there are several sciences devoted to the study of Science: the Philosophy of Science, the Sociology of Science, the Psychology of Science, the Economy of Science, the Political of Science, the Semiotics of Science, the Analysis of the Scientific Discourse and the Science of Science (Witter, 1987).

Velho (1990) mentions that despite these scientometric indicators were developed in core scientific countries they are also used in Latin-America.

Spinak (1998) refers that the scientific mediation in the basis of the scientometric indicators. The mediation techniques have just a little more than three decades of existence and are still not completely consolidated. There is still no consensus about how to measure and evaluate the scientific production. Even so, he divides the scientometric indicators in two large groups:

1. Publishing indicators: measure the amount and impact of scientific publications. Examples: number of papers per country, per discipline, rate of publication growth, authors' productivity, mean duration of publications, vocabulary use, and others.
2. Citation indicators: measure the amount and impact of links or relations between scientific publications. Examples: citation analysis, immediate responsiveness index, rate of self citations, impact factors, and others.

In order to consider the scientometric indicators Trzesniak (1998) points out to the existence of deterministic and estocastic indicators. The first are characterized by the direct link between cause and effect - its' value measure its own effect. The estocastic measure the effect's occurrence

probability. This is the case of the Impact Factor (IF) when applied to evaluate the quality of a journal, an author or a field of knowledge.

Still according to Trzeniak, in the exact sciences the deterministic characteristics prevail. The phenomena in this area may be perfectly quantified in one singular value, as for example the notion of hot and cold. With the physic concept of "temperature" and the use of thermometers this notion can be transformed in a number that makes sense to the Men. To other areas of knowledge, specially the human sciences, predominantly estocastic, efforts to quantify phenomena are being made: the ecometry to economy, the sociometry to social sciences, the psychometry to personality and other human abilities, and the scientometrics, informetrics and bibliometrics studies to knowledge production and diffusion.

In another approach of scientometric indicators Bicas et al (2002) consider that they vary according to a series of variables as the publication language, nature of the subject, prestige publishing institution, immediate responsiveness, mean number of authors, authors', institutions' prestige, diffusion, number of published papers and journal's importance.

According to Elkis (1999), Bicas et al. (2002), Strehl and Santos (2002) the most used scientometric indicators nowadays are:

1. Productivity index: relation between the number of citations of one determined author and the number of papers corresponding to those citations.
2. Publication's half-life index: time (in years) corresponding to the appearance in scientific literature of 50% of the total of citations attributed to a journal in the first 6 years after the year of reference. This indicator provides a notion about how long the papers of a given journal continue to be cited.
3. Immediate responsiveness index: number of times a specific paper of a specific journal is cited (in all journals) during the year of its publication. This indicator provides a notion about the speed with which a production is referred.
4. Impact factor: the most used indicator.

In 1955 Eugene Garfield proposed the concept of Impact Factor (IF) in a paper published in the journal Science. In 1958 he founded the Institute

for Scientific Information (ISI) in Philadelphia (USA), the first computerized data base to the study of the world's scientific production. This way, the IF was originally calculated only among the journals indexed in the ISI data base which,

according to the same Institute (ISI, n.d.), covers approximately 7.000 journal (230 categories, 60 countries and 3000 publishers).

The Garfield formula to calculate the IF is:

$$\text{IF journal A, year X} = \frac{\text{number of citations that journal A receives in years (X-1) (X-2) among the journals indexed in the ISI}}{\text{Total number of papers published in journal A in years (X-1) (X-2)}}$$

It should be observed that the denominator in this formula withdraws the advantage of journals with greater number of papers.

The IF can be calculated to different periods of time, by increasing the number of considered years of which to count the number of papers and citations. This way, considering the years (X-1), (X-2) and (X-3) on the numerator and on the denominator, the three years IF is obtained. The five years IF is also usually calculated.

The IF account aims to determine a paper's global value. The number of times a journal is cited shows the visibility and accessibility of published research and how much they are influencing posterior works.

According to O'Neil (2000), the IF is a rate that shows the mean influence of a paper, published on a given year, influenced the work of other researchers on the second and third years after its publication.

In 1995 the IF creator warned about Latin-American science's the need of citation indexes in order to avoid injustices in several areas, as research funding, professional employment and qualification of journals, among others.

"...What the ISI database represents is the set of journals that constitute the internationally influential literature. It does not represent the science of any given country or region as a whole, but it does represent the portion of research that is published within and cited within the nternationally elite literature. Beyond that, it generally represents the best science performed in any nation (...) Of course, key research is communicated in regional or local journals not indexed by ISI, which serve as important, even essential, vehicles for communication for members of a local or regional community (...) Such a database does not yet exist, although I have suggested for some years that a Latin American

Citation Index would be an interesting undertaking..." (Garfield, 1995.p.88).

The Scientific Electronic Library On-Line (SciELO) appeared in the decade of 1990 to increase the visibility of the Science produced in Brazil. It is a model of cooperative electronic publication of scientific journals in the Web specially developed to answer to the scientific communication needs in developing countries and in Latin America and Caribbean specially. It contains integrated procedures to measure the use and impact of scientific journals (Biojone, 2001).

Since 2002 SciELO presents the IFs of the journals indexed in its data base. IFs referring to periods of two or three years are available (SciELO, n.d.).

In the researched literature (MEDLINE. Lilacs, SciELO, Capes, Dedalus, Probe, Bireme's central library) just one specific analysis of Audiology, Speech and Language journals was found, preformed by the American Speech and Hearing Association (ASHA, n.d.a.).

ASHA is an American professional and scientific association with more than 109 thousand speech and language pathologists and audiologists, with the mission of guarantee that all individuals with language, speech and auditory impairment may reach quality services that may help them obtain a more effective communication (ASHA, n.d.b.).

This association today is responsible for four scientific journals: Language, Speech and Hearing Services in Schools (LSHSS), American Journal of Audiology (AJA), American Journal of Speech-Language Pathology (AJSLP) and Journal of Speech, Language and Hearing Research (JSLHR). Its site provides the following data about their journals: creation, circulation rate, IF, total of published pages, acceptance and rejection rates, time between acceptance and publication of research, among other information (ASHA.n.d.a.).

ASHA journal's IFs in the year of 2000 can be observed in Chart 1, with the exception of AJA that is not included in ISI:

Objective

Once the scientific production is the materialization of produced knowledge and considering that bibliometrics and scientometrics analysis help to demonstrate the development of a science and its scientific production, the purpose of this paper is to determine the Impact Factor of the seven Brazilian journals on the area of Audiology, Speech and Language Pathology registered on the Brazilian Institute of Science and Technology Information (Ibict) and so having an International Standard Serial Number (ISSN) (Chart 2).

CHART 1. Impact factor of ASHA journals in the year of 2000 and their ranking in the areas of Applied Linguistics and Rehabilitation.

Journal	AJSLP	JSLHR	LSHSS
Relative IF in 2000	1,127	1,590	0,585
Ranking in Applied Linguistics (among 40)	7º.	3º.	21º.
Ranking in Rehabilitation (among 48)	7º.	2º.	20º.

Legend: AJSLP - American Journal of Speech-Language Pathology; JSLHR - Journal of Speech, Language and Hearing Research Language; LSHSS - Speech and Hearing Services in Schools.

CHART 2. Description of the journals chosen to this study.

Journal Title	ISSN	Entidade Responsável*	Ano de Início de Publicação
Distúrbios da Comunicação	0102-762X	PUC - SP	Volume 1, 1986
Pró-Fono – Revista de Atualização Científica	0104-5687	Pró-Fono	Volume 1, 1989
Fono Atual	1517-0632	Pancast	Ano 1, 1997
Revista da Sociedade Brasileira de Fonoaudiologia	1516-8034	SBFa	Ano 1, 1997
Fonoaudiologia Brasil	1516-8131	CFFa	Ano 1, 1998
Revista Cefac Atualização Científica em Fonoaudiologia	1516-1846	Revinter	Volume 1, 1999
Jornal Brasileiro de Fonoaudiologia	1517-5308	Maio	Ano 1, 1999

*PUC-SP: Pontifícia Universidade Católica de São Paulo (São Paulo Catholic University); Pró-fono: private Publisher; Pancast: private publisher; SBFa: Sociedade Brasileira de Fonoaudiologia (Brazilian Audiology, Speech and Language Pathology Society); CFFa: Conselho Federal de Fonoaudiologia (Federal Audiology, Speech and Language Pathology Professional Council); Revinter: private publisher; Maio: private publisher.

The Register Protocol of Journal Impact Indicator (Priip - Annex - Campanatti-Ostiz, 2004) was developed to this research.

Considering that, until March 2003 none of these journals was indexed in the Scientific Electronic Library On-Line (SciELO) and thus having no IF rate on this data base and that the present research is related to Brazilian journals of Audiology, Speech and Hearing Pathology, we choose to calculate the IF as originally proposed by Garfield.

To calculate the journal's IF the reference lists of each paper were analyzed. The references of research, case studies, literature review and update papers were considered. Letter to the editor, editorials, abstracts, commentaries and others were excluded. The following procedures were applied:

1. Register on the protocol the number of times the participating journals were cited in the papers' references (considering the two years prior to the publication of the analyzed journal).
2. Apply the original Garfield formula to the IF calculus on the seven papers included in this research.

A given journal participates on the IF determination only after two complete years after its publication. This way, despite the journal *Pró-Fono Revista de Atualização Científica* has been first published in 1989, its IF started to be rated only in 1992, because during 1989 just one issue was published. The *Jornal Brasileiro de Fonoaudiologia* wasn't included since its first issue was published in the end of 1999 and thus could only participate in the 2002 rating and this year wasn't included in this study.

This way, to the IF ratings of the years between 1992 and 1998 the participating journals were: *Distúrbios da Comunicação* and *Pró-Fono Revista de Atualização Científica*. In 1999 were included the journals *Fono Atual* and *Revista da Sociedade Brasileira de Fonoaudiologia*. The journal *Fonoaudiologia Brasil* was included in the ratings of 2000. To the 2001 ratings the journal *Revista Cefac Atualização Científica em Fonoaudiologia* was included.

This research will present the estocastic indicators when isolated observations of the numbers presented don't provide any conclusions (Trzeniak, 1998). Results must be analyzed along with several other aspects to support consistent statements.

The 9.334 references of 549 papers from the seven journals were analyzed. To guarantee an impartial evaluation of each research the authors' self-citations were excluded, as recommended by Meadows (1999).

Table 1 presents the IF of 1992. To this analysis the 23 papers published in 1992 by the journals *Distúrbios da Comunicação* and *Pró-Fono Revista de Atualização Científica* were studied.

The search for references of papers published in these same journals on the two years immediately prior, on the 366 references of the 23 papers published in 1992, found just one reference of the first journal (*Distúrbios da Comunicação*) resulting in a IF of 0,050. This way 366 references were needed to find one reference of a paper published in the period of 1990-1991, meaning that just 0,3% of the references published in 1992 referred to papers published in both journals in the two years prior to the analysis.

Tables 2, 3, 4, 5, 6 and 7 show the IF of the years between 1993 and 1998.

The years of 1993, 1994, 1995, 1996 and 1998 presented IF equal zero (Tables 2, 3, 4, 5 and 7). To the ratings of these five years 151 papers were analyzed. This 151 papers published 2.499 references and none of them referred to papers published in the journals *Distúrbios da Comunicação* and *Pró-Fono Revista de Atualização Científica* in the two years prior to the considered year.

The Table 6 shows the IF of 1997. To this analysis 35 papers published in 1997 by the journals *Distúrbios da Comunicação* and *Pró-Fono Revista de Atualização Científica* were studied. The search for references of papers published two years before on the 640 references of these 1997 papers identified seven references, resulting on IFs of 0,100 for the first paper (*Distúrbios da Comunicação*) and 0,128 for the second (*Pró-Fono Revista de Atualização Científica*). This way 640 references were needed to find seven references of papers published in the period of 1995-1996, that means 91,4 references for each paper referred.

Just 1% of the references published in 1997 referred to papers published in these journals in the two years immediately before the analysis.

The correction effect produced by the denominator of the IF formula can be observed in Table 6. The journal *Pró-Fono Revista de Atualização Científica* was referred six times in 1997, considering papers published in 1995 and 1996. On the other hand the journal *Distúrbios da Comunicação* was cited just once. Even so the IF of the journal *Pró-Fono Revista de Atualização Científica* is just 0,028 higher than the IF of the journal *Distúrbios da Comunicação* in 1997. The reason the IFs are almost the same is that the journal *Pró-Fono Revista de Atualização Científica* published 47 papers in 1995 and 1996 while the journal *Distúrbios da Comunicação* published just 10 in the same period. If the correction factor was not used the IF of the journal *Pró-Fono Revista de Atualização Científica* would be significantly higher than the IF of the journal *Distúrbios da Comunicação* in the year of 1997.

TABLE 1. Impact Factor of each paper in the year of 1992.

Journal	References Made in 1992 of Papers Published		Total of Published Papers in 1990 and 1991 (C)	1992 Impact Factor [(A+B)/C]
	In 1990 (A)	In 1991 (B)		
Distúrbios da Comunicação	1	0	20	0,050
Pró-Fono Revista de Atualização Científica	0	0	21	0

TABLE 2. Impact Factor of each paper in the year of 1993.

Journal	References Made in 1993 of Papers Published		Total of Published Papers in 1991 and 1992 (C)	1993 Impact Factor [(A+B)/C]
	In 1991 (A)	In 1992 (B)		
Distúrbios da Comunicação	0	0	20	0
Pró-Fono Revista de Atualização Científica	0	0	28	0

TABLE 3. Impact Factor of each paper in the year of 1994.

Journal	References Made in 1994 of Papers Published		Total of Published Papers in 1992 and 1993 (C)	1994 Impact Factor [(A+B)/C]
	Em 1992 (A)	Em 1993 (B)		
Distúrbios da Comunicação	0	0	17	0
Pró-Fono Revista de Atualização Científica	0	0	29	0

TABLE 4. Impact Factor of each paper in the year of 1995.

Journal	References Made in 1995 of Papers Published		Total of Published Papers in 1993 and 1994 (C)	1995 Impact Factor [(A+B)/C]
	In 1993 (A)	In 1994 (B)		
Distúrbios da Comunicação	0	0	22	0
Pró-Fono Revista de Atualização Científica	0	0	28	0

TABLE 5. Impact Factor of each paper in the year of 1996.

Journal	References Made in 1996 of Papers Published		Total of Published Papers in 1994 and 1995 (C)	1996 Impact Factor [(A+B)/C]
	In 1994 (A)	In 1995 (B)		
Distúrbios da Comunicação	0	0	17	0
Pró-Fono Revista de Atualização Científica	0	0	41	0

TABLE 6. Impact Factor of each paper in the year of 1997.

Journal	References Made in 1997 of Papers Published		Total of Published Papers in 1995 and 1996 (C)	1997 Impact Factor [(A+B)/C]
	In 1995 (A)	In 1996 (B)		
Distúrbios da Comunicação	1	0	10	0,100
Pró-Fono Revista de Atualização Científica	4	2	47	0,128

TABLE 7. Impact Factor of each paper in the year of 1998.

Journal	References Made in 1998 of Papers Published		Total of Published Papers in 1996 and 1997 (C)	1998 Impact Factor [(A+B)/C]
	In 1996 (A)	In 1997 (B)		
Distúrbios da Comunicação	0	0	17	0
Pró-Fono Revista de Atualização Científica	0	0	44	0

Table 8 shows the IF of 1999. To the 1999 IF analysis, the 89 papers published by the journals Pró-Fono Revista de Atualização Científica, Distúrbios da Comunicação, Fono Atual and Revista da Sociedade Brasileira de Fonoaudiologia were studied. The search for references to papers published in the two immediately prior years, in these journals, in the 1.363 references of the papers

published in 1999, six citations were found. This way, 1.363 references were needed to find six references of papers published in the 1997-1998 period, it means 227,2 references to each citation found (1362 references divided by six citations).

Just 0,4% of the references published in 1999 referred to papers published in these four journal in the two years before the analysis.

TABLE 8. Impact Factor of each paper in the year of 1999.

Journal	References Made in 1999 of Papers Published		Total of Published Papers in 1997 and 1998 (C)	1999 Impact Factor [(A+B)/C]
	In 1997 (A)	In 1998 (B)		
Distúrbios da Comunicação	0	0	24	0
Pró-Fono Revista de Atualização Científica	3	1	55	0,073
Fono Atual	0	0	43	0
Revista da Sociedade Brasileira de Fonoaudiologia	0	2	43	0,047

Table 8 also shows the correction provided by the denominator of the IF formula. The IFs of the journals *Pró-Fono Revista de Atualização Científica* and *Revista da Sociedade Brasileira de Fonoaudiologia* are almost the same (0,073 and 0,047, respectively). The journal *Pró-Fono Revista de Atualização Científica* published 55 papers in 1997 and 1998 and received four citations in 1999 referring the two prior years. The journal *Revista da Sociedade Brasileira de Fonoaudiologia* published 43 papers in 1997 and 1998 and in 1999 received two citations of the two prior years.

Table 9 shows the IF of the year 2000. To the analysis of the IF of 2000, 112 papers published in 2000 by the journals *Distúrbios da Comunicação*, *Pró-Fono Revista de Atualização Científica*, *Fono Atual*, *Revista da Sociedade Brasileira de Fonoaudiologia* and *Fonoaudiologia Brasil* were studied. The search for references to papers published in the two immediately prior years, in these journals, in the 1.893 references of the papers published in 2000, 14 citations were found. It resulted on an IF of 0,009 to the first journal, 0,068 to the second, 0,022 to the third, 0,128 to the fourth and 0,077 to the fifth. This way, 1893 references were needed to find 14 citations of papers published in the 1998-1999 period, that means 135,2 references

to each citation (1893 references divided by 14 citations).

Only 0,7% of the references published in 2000 referred to papers published in these five journals in the two years immediately prior to the analysis.

The Table 9 shows two citations of the journal *Distúrbios da Comunicação*. Further analysis show that both citations refer to one paper published by the journal *Revista da Sociedade Brasileira de Fonoaudiologia* with a total of just seven references. The *Revista da Sociedade Brasileira de Fonoaudiologia* presented the highest IF (0,128). This journal received five citations in 2000 referring to papers published in 1998. The analysis of these five citations shows that three of them mention the same paper: Chewing and swallowing habits in 3 to 5 years children by Meurer, B; Veiga, I; Capp, E. According to the research performed by Andrade (2001) the publishing productivity in the Speech and Language area is almost three times as large as that of Audiology and Hearing Sciences area, while in the third area, Educational and Professional Support the productivity was nears zero. When considering the research fields, the higher IF was observed in the field of oral miofunctional developmental disorders. These results may explain why just one paper represents 60% of the citations of a journal in two years.

TABLE 9. Impact Factor of each paper in the year of 2000.

Journal	References Made in 2000 of Papers Published		Total of Published Papers in 1998 and 1999 (C)	2000 Impact Factor [(A+B)/C]
	In 1998 (A)	In 1999 (B)		
Distúrbios da Comunicação	2	0	24	0,009
Pró-Fono Revista de Atualização Científica	4	1	74	0,068
Fono Atual	0	1	46	0,022
Revista da Sociedade Brasileira de Fonoaudiologia	5	0	39	0,128
Fonoaudiologia Brasil	1	0	13	0,077

The Table 10 shows the IF of 2001. To the analysis of the IF of 2001, 139 papers published in 2001 by the journals *Distúrbios da Comunicação*, *Pró-Fono Revista de Atualização Científica*, *Fono Atual*, *Revista da Sociedade Brasileira de Fonoaudiologia*, *Fonoaudiologia Brasil* and *Revista Cefac Atualização Científica em Fonoaudiologia* were studied. The search for references to papers published in the two immediately prior years, in these journals, in the 2.573 references of the papers published in 2001, 15 citations were found. It resulted on an IF of 0,138 to the first journal, 0,054 to the second, 0,036 to the third, 0,061 to the fourth, 0,067 to the fifth and 0,044 to the sixth. This way,

2573 references were needed to find 15 citations of papers published in the 1999-2000 period, that means 171,5 references to each citation (2573 references divided by 15 citations).

Just 0,6% of the references published in 2001 referred to papers in these six journals in the two years prior to the analysis.

It can be observed in Table 10 the existence of 15 citations of papers published in 1999 and in 2000. The highest IF was obtained by the journal *Distúrbios da Comunicação* (0,138).

In the Table 11 are presented the IF values of the analyzed journals in the period between 1992 and 2001.

TABLE 10. Impact Factor of each paper in the year of 2001.

Journal	References Made in 2001 of Papers Published		Total of Published Papers in 1999 and 2000 (C)	2000 Impact Factor [(A+B)/C]
	In 1999 (A)	In 2000 (B)		
<i>Distúrbios da Comunicação</i>	4	0	29	0,138
<i>Pró-Fono Revista de Atualização Científica</i>	4	0	74	0,054
<i>Fono Atual</i>	1	1	56	0,036
<i>Revista da Sociedade Brasileira de Fonoaudiologia</i>	1	1	33	0,061
<i>Fonoaudiologia Brasil</i>	1	0	15	0,067
<i>Revista Cefac Atualização Científica em Fonoaudiologia</i>	2	0	45	0,044

TABLE 11. Impact Factor of each paper in the years of 1992 to 2001.

Journal	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
<i>Distúrbios da Comunicação</i>	0,050	0,000	0,000	0,000	0,000	0,100	0,000	0,000	0,009	0,138
<i>Pró-Fono Revista de Atualização Científica</i>	0,000	0,000	0,000	0,000	0,000	0,128	0,000	0,073	0,068	0,054
<i>Fono Atual</i>								0,000	0,022	0,036
<i>Revista da Sociedade Brasileira de Fonoaudiologia</i>								0,047	0,128	0,061
<i>Fonoaudiologia Brasil</i>									0,077	0,067
<i>Revista Cefac Atualização Científica em Fonoaudiologia</i>										0,044
MÉDIA	0,025	0,000	0,000	0,000	0,000	0,114	0,000	0,030	0,061	0,067

Conclusions

Despite Brazilian Audiology, Speech and Language Pathology's IFs are close to zero, it is necessary to analyze which elements are the real reasons of these results. As Trzesniak (2001) pointed out it is very easy to count data and determine means and relations. The difficult part is to determine which are the information provided by the data and what they really mean.

Some hypothesis may be drawn from the results obtained in the ten years that were analyzed:

- . low visibility of Lilacs data base, the indexer data base of the two journals that had IFs equal zero in some years;
- . low accessibility of the journals;
- . low interest by researchers in reading national journals;
- . lack of reference to consulted papers;
- . disparity between various available search tools in data bases (title, author, subject, key-words, among others) and searches based on subjects. Lilacs uses the DeCS (Descriptors in Social Sciences) in the indexation process and it doesn't properly address the terms of Brazilian Audiology, Speech and Language Pathology;
- . absence of librarians that are experienced and familiarized with the peculiarities of Audiology, Speech and Language Pathology in the process of choosing the key words of a paper;
- . combinations of the above items.

Considering the mean references needed to each citation in the years of 1992 (336 references to each citation), 1997 (91,4 references to each citation), 1999 (227,2 references to each citation), 2000 (135,2 references to each citation) and 2001 (171,5 references to each citation) the value obtained is 198,3 references needed to the citation of a paper published in the two prior years. According to the data presented the mean amount of references generated by a paper is 16,6 in Brazilian Audiology, Speech and Language Pathology. This way, it is necessary to publish 11,9 papers to obtain the citation of only one paper in Brazilian Audiology, Speech and Language Pathology.

It is possible to observe that the IFs of Brazilian Audiology, Speech and Language Pathology among the six journals with which it was possible to apply the formula increased since the year of 1999 suggesting a maturing process of this Science. The continuation of this research in the years after 2001 is necessary to verify if there really was an increase of the impact of these papers.

Sardemberg (2002), then the ministry of Sciences and Technology, wrote: "It is necessary that the international partners understand: the knowledge achieved in Brazilian territory must be presented here first and just later spread to and used by other countries". Amplifying this statement we add that not just the international partners but also our Brazilian authors must present their work first here. And that above all we Brazilians should thrive to know better the work of our fellow researchers.

The authors of this paper believe that the results presented here show that just the evaluation based solely in the journals' IFs is not conclusive, pointing to the necessity of other concurrent evaluations. Besides, the quality of a paper is inherent to itself and doesn't depend of its destination.

Despite that, some questions may be raised in the names of researchers, authors, reviewers and editors: to whom and with which purposes are we writing, evaluating, revising, editing, investing and publishing our scientific papers, spending so much effort and time?

Above all it is essential to ponder on what Andrade wrote in 2002:

"...The impact index may be measured by calculating the number of studies were developed based on a given research (number of citations referring this research). The clinical impact of a research, how much that study contributed to improve the clinical practice, that is, the professional day-to-day work - it is impossible to measure...".

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Anex

Register Protocol of Journal Impact Indicator (Priip - Annex - Campanatti-Ostiz, 2004)

1. Journal identification (title, volume or year, number or issue)

- | |
|--|
| <ul style="list-style-type: none">1.1. Title:1.2. Volume (or Year):1.3. Number (or Issue):1.4. Civilian Year: |
|--|

2. Number of times the following journals were cited in the references of the papers (excluding authors' self-citations) published in the two years prior to the period involved in this protocol.

2.1. Distúrbios da Comunicação (year before):

- | |
|---|
| <ul style="list-style-type: none">2.2. Distúrbios da Comunicação (two years before):2.3. Pró-Fono Revista de Atualização Científica (year before):2.4. Pró-Fono Revista de Atualização Científica (two years before):2.5. Fono Atual (year before):2.6. Fono Atual (two years before):2.7. Revista da Sociedade Brasileira de Fonoaudiologia (year before):2.8. Revista da Sociedade Brasileira de Fonoaudiologia (two years before):2.9. Fonoaudiologia Brasil (year before):2.10. Fonoaudiologia Brasil (two years before):2.11. Revista Cefac Atualização Científica em Fonoaudiologia (year before):2.12. Revista Cefac Atualização Científica em Fonoaudiologia (two years before):2.13. Jornal Brasileiro de Fonoaudiologia (year before):2.14. Jornal Brasileiro de Fonoaudiologia (two years before): |
|---|

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- Heliane Campanatti-Ostiz. Rua Gêmeos, 22 - Condomínio Alphaville Conde 1. Barueri - São Paulo - CEP - 06473-020. Fax: (11) 4688-0147
- E-mail: campanattiestiz@profono.com.br.
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