

The scientific production of Nutrition published by the Scientific Electronic Library under the gaze of the evaluation of the Coordination for the Development of Higher Education Personnel

*A produção científica da Nutrição publicada pela Scientific Electronic Library sob o olhar da avaliação da Coordenação de Aperfeiçoamento de Pessoal de Nível Superior*

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## ABSTRACT

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### Objective

Perform analysis of the scientific production of Nutrition published by the Scientific Electronic Library under the gaze of the evaluation of *Coordenação de Aperfeiçoamento de Pessoal de Nível Superior*.

### Methods

Systematic search was performed in the 286 current title journals, using the "article search" path, the "subject index" window and the "Nutrition" indexer. The articles and periodicals selected were analyzed in order to answer the following questions: Which journals from Scientific Electronic Library publish articles on Nutrition? Do these journals have an impact factor as measured by the Journal Citation Reports? Which are? What is the classification of these journals by the areas of evaluation of *Coordenação de Aperfeiçoamento de Pessoal de Nível Superior*, specifically by the area of Nutrition?

### Results

We analyzed 779 articles published in 85 journals. The majority of articles (n=698; 89.6%) were related to the area of Health Sciences. The five journals with higher volumes of articles were: Brazilian Journal of Nutrition,

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Reports in Public Health, Public Health Journal, Science & Public Health and Journal of Pediatrics. Most (62.4%) does not have Journal Citation Reports. The Nutrition area not rated any journal in strata A1 and A2, classifying them from B1 to B4. For eight areas analyzed their specific journals were induced to the upper strata of Qualis (A1, A2 and B1).

### Conclusion

The analyzed journals are the main vehicles of circulation of scientific paradigms of national scientific communities. Considering the correlation of forces between the vehicles of circulation of scientific knowledge in the international context, stimuli for valorization and qualification of these journals are essential.

**Keywords:** Health postgraduate programs. Nutrition. Periodicals journals.

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## RESUMO

### Objetivo

Realizar análise da produção científica da Nutrição publicada pela Scientific Electronic Library sob o olhar da avaliação da Coordenação de Aperfeiçoamento de Pessoal de Nível Superior.

### Métodos

Busca sistemática foi realizada nos 286 periódicos de títulos correntes, usando o caminho "pesquisa de artigos", a janela "índice de assunto" e o indexador "Nutrição". Os artigos e periódicos selecionados foram analisados visando a responder as questões: Que periódicos da base Scientific Electronic Library publicam artigos sobre Nutrição? Estes periódicos apresentam fator de impacto medido pelo Journal Citation Reports? Quais? Qual a classificação destes periódicos pelas áreas de avaliação da Coordenação de Aperfeiçoamento de Pessoal de Nível Superior, especificamente pela área de Nutrição?

### Resultados

Foram analisados 779 artigos publicados em 85 periódicos. A maioria dos artigos (n=698; 89,6%) vinculou-se à grande área de Ciências da Saúde. Os cinco periódicos com maiores volumes de artigos foram: Revista de Nutrição, Cadernos de Saúde Pública, Revista de Saúde Pública, Ciência & Saúde Coletiva e Jornal de Pediatria. A maioria (62,4%) não possui Journal Citation Reports. A área de Nutrição não classificou nenhum periódico nos estratos A1 e A2, classificando-os entre B1 a B4. Para oito das áreas analisadas seus periódicos específicos foram induzidos para os estratos superiores de Qualis (A1, A2 e B1).

### Conclusão

Os periódicos analisados constituem os principais veículos de circulação dos paradigmas científicos das comunidades científicas nacionais. Considerando a correlação de forças entre os veículos de circulação do conhecimento científico no contexto internacional, estímulos para valorização e qualificação desses periódicos são imprescindíveis.

**Palavras-chave:** Nutrição. Programas de pós-graduação em saúde. Publicações periódicas.

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## INTRODUCTION

The creation of the Nutrition knowledge area in the *Coordenação de Aperfeiçoamento de Pessoal de Nível Superior* (CAPES, Coordination for the Development of Higher Education Personnel) is a recent event, occurring in June 2011 [1,2]. Nutrition is among the 48 areas of knowledge that make up the National Graduate System (SNPG) of CAPES. According to CAPES's data, on December 6, 2016, 28 programs and 40 graduate courses, in the strict sense, were linked

to the Nutrition assessment area: 25 academic master's degree courses, 12 doctoral courses, and 3 professional master programs [3].

The growth of graduate courses strictly in Nutrition in the last 20 years [4-6] seems coherent and consistent with the policy of expansion of the Brazilian graduate system whose guidelines, strategies, and goals were established in successive *Plano Nacional de Pós-Graduação* (PNPG, National Graduate Plans), mainly from the PNPG V (2005 to 2010) and the current PNPG VI (2011 to 2020) [7-9].

Since 2014, the SNPG has covered the annual monitoring and quadrennial evaluation of the performance of all programs and courses that constitute it. The next quadrennial assessment is expected to occur in 2017 and will relate to the monitoring of data and information for the years 2013, 2014, 2015, and 2016 [10,11].

According to CAPES, in the evaluation of the Brazilian graduate system, the references for the evaluation process consists of three parts: Area Documents, Evaluation Forms, and Evaluation Reports. In the Area Documents, the current state, characteristics, and perspectives are described, as well as items considered a priority in the evaluation of graduate programs [12]. In the Evaluation Forms, five items were considered for the evaluation of programs for the area of Nutrition used for the three-year period from 2010 to 2012: 1) Program proposal (with a weight of 0% in the final mark of the program); 2) Teaching staff (weight of 15%); 3) Student body, theses, and dissertations (weight of 35%); 4) Intellectual production (weight of 35%); and 5) Social inclusion (weight of 15%) [13].

Regarding the intellectual production, the programs in the area of Nutrition were evaluated in the three-year period from 2010 to 2012 by means of complete articles published in scientific journals (Qualis Journals) and books (Book classification). The Qualis Journals in the Nutrition area adopted the impact factor, measured by the Journal Citation Reports (JCR), and the H-index, measured by the SCImago Journal Rank (SJR), as principles of classification. The journals were classified into eight Qualis strata, in descending order of importance and value of impact factor (JCR) or H-index (SJR): A1, A2, B1, B2, B3, B4, B5, and C, according to the general principles established by CAPES (common to all areas of knowledge) and the adherence principles specific to the area of Nutrition [13].

The graduate evaluation system in Brazil, implemented by CAPES, has been the subject of interesting research in the last two decades [7,14-34]. The evaluation of the SNPG, performed

to include publications occurring from 2004 to 2016, identified and selected 22 articles on such theme. It is noteworthy that of these 22 articles, 10 address aspects related to the possibilities and limitations of the SNPG as a whole; therefore, they are characterized as articles on the evaluation of the multidisciplinary group of 48 knowledge areas recognized by the system [7,24-26,28-30, 32-34]. Four articles are related to the Public Health knowledge area [16,19,20,23]; three to the area of Education [14,15,18]; two to the area of Psychology [17,21]; one to the Humanities and Social Sciences [27]; one to the area of Physical Education [22]; and one to the area of History [31]. In addition to the articles referred to, specifically, in the area of Nutrition, seven articles related to the Brazilian graduate system were identified [2,4-6,35-37].

The objective of this work was to perform an analysis of the scientific output on Nutrition published by the Scientific Electronic Library (SciELO) under the evaluation of CAPES. It is worth noting that the SciELO collection is an electronic library created in 1997 for, among other purposes, indexing and providing and disseminating via the internet in open access Brazilian scientific journals from all areas of knowledge. It predominantly publishes original articles from domestic scientific research that meet the index criteria (linking to the norms of publication and international databases; qualified editorial board; peer review system; punctuality and regularity of publication, etc.) [38]. The choice of SciELO as the sole source of this research is justified, first, by our recognition of the relevant mission that this electronic database proposes: to promote increased visibility, accessibility, and credibility of scientific publications produced in Brazil [18,20,27,38]. Second, by analyzing the scientific output on Nutrition published by SciELO, from the evaluation criteria of CAPES, insights may be provided for reflection on the possibilities and limitations of strictly graduate studies in Nutrition in the country.

## METHODS

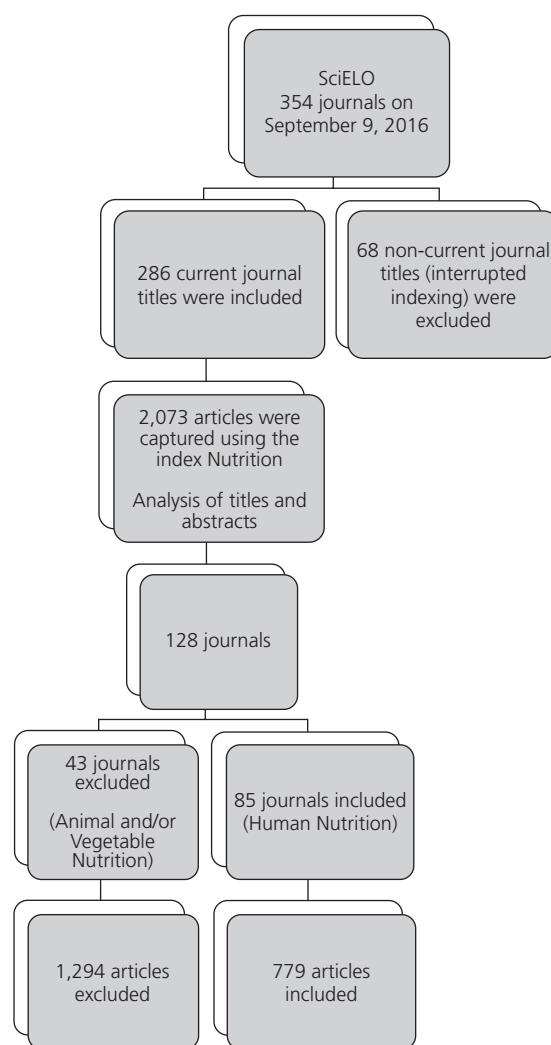
A systematic search for articles in the SciELO database was carried out on September 9, 2016. On this day, 354 journal titles were recorded; 286 were listed with current journal titles and 68 with non-current titles (with interrupted indexing).

As the database search did not allow the capture of articles published only in the 286 current journal titles, an "individualized" search was conducted in these journals. The search on the individual page of each journal of the SciELO system was performed by means of an *article search*, using the *subject index* window. As this is a database for journals edited in Brazil, using the index "*Nutrição*" (Nutrition) captured 2,073 articles and "*Alimentação*" (Food), 880 articles, in the set of 286 current journal titles. A preliminary analysis of the captured articles, with the criteria of reading the titles and abstracts, allowed us in choosing to use only the index "Nutrition", as it offered a more comprehensive capture that is sufficient and adequate for the objectives of this investigation. In other words, what interest us were the answers to the research questions: What journals from the SciELO database publish articles on the subject of Nutrition? Do these journals present an impact factor measured by the JCR database? What are the impact factors of these journals? What is the classification (Qualis) of these journals in the distinct areas of the CAPES evaluation in general and in the area of nutrition in particular?

The 2,073 articles captured using the index "Nutrition" were published in 128 (44.8%) of the 286 current title journals of the SciELO database. After an analysis of titles and abstracts, 43 journals and 1,294 articles were excluded as they did not address the theme of human nutrition; they were related to the areas of animal nutrition and/or of plants/vegetables (Agronomy, Agrotechnology, Botany, Veterinary Medicine, Microbiology, Zoology, and Animal Science).

The final analysis was performed with 779 articles published in 85 current title journals from

the investigated database. Figure 1 presents the flowchart of the search process for articles and journals. Criteria of exclusion/inclusion were not applied for the year of publication of the 779 analyzed articles. A previous analysis of the five journals with the highest volumes of publications in the area of Nutrition (*Revista de Nutrição*, *Cadernos de Saúde Pública*, *Revista de Saúde Pública*, *Ciência e Saúde Coletiva*, and *Jornal de Pediatria*) showed that the search captured articles published from 1967 to 2016; however, the highest concentration of the captured articles



**Figure 1.** Flowchart of the selection process for journals and articles on nutrition published in the Scientific Electronic Library Online (SciELO) database.

were published beginning in 1997, the year in which the SciELO database started to index most of the analyzed materials [38].

The 85 analyzed journals were grouped according to relevant fields of knowledge, defined by reading the "mission" explained in the home pages of the investigated database. Twelve areas of knowledge were listed, with reference to the areas of assessment established by CAPES [39]: Administration; Food Science and Technology; Education, Arts, and Humanities; Physical Education, Physiotherapy, and Speech Therapy; Nursing; Pharmacy and Chemistry; History; Interdisciplinary; Medicine (I, II, and III); Nutrition; Psychology; and Public Health.

The results are presented in the form of distribution tables for the articles. The journals were analyzed in two blocks according to the existence or not of a JCR impact factor for the year 2015. In the two analyzed blocks, we tried to identify the number of articles per journal; the Qualis 2014 for the journal in the area of Nutrition; and the Qualis 2014 for the 12 knowledge areas for the journal. A specific analysis was performed on the Qualis 2014 for the journal *Revista de Nutrição* for the 12 areas of knowledge.

## RESULTS

The distribution of the 85 analyzed journals according to the 12 areas of CAPES evaluation contained the following, in decreasing order: 1st Medicine I, II, and III (n=35; 41.2%); 2nd Public Health (n=10; 11.8%); 3rd Physical Education, Physiotherapy, and Speech Therapy (n=8, 9.4%); 4th Nursing (n=7; 8.3%); 5th Education (n=7; 8.3%); 6th Interdisciplinary (n=4; 4.7%); 7th Psychology (n=4; 4.7%); 8th Food Science and Technology (n=3; 3.5%); 9th Pharmacy and Chemistry (n=2; 2.4%); 10th Administration (n=2; 2.4%); 11th History (n=2; 2.4%); and 12th Nutrition (n=1; 1.2%).

The distribution of the 779 articles analyzed according to the 12 areas of CAPES

evaluation contained the following, in decreasing order: 1st Public Health (n=238); 2nd Medicine I, II, and III (n=211); 3rd Nutrition (n=177); 4th Nursing (n=39); 5th Interdisciplinary (n=33); 6th Physical Education/Physiotherapy/Speech Therapy (n=29); 7th Education/Arts/Social Sciences (n=15); 8th History (n=13); 9th Food Science and Technology (n=10); 10th Pharmacy and Chemistry (n=7); 11th Psychology (n=5); and 12th Administration (n=2).

Of the 85 journals analyzed, 53 (62.4%) had no JCR impact factor for 2015. The 32 that possessed a JCR impact factor had a range from 0.134 (lowest) to 2.181 (highest), averaging 0.3323 and with a standard deviation of 0.5322.

Table 1 shows the distribution of the 32 journals that held a JCR according to the parameters analyzed.

The 32 journals with JCR published 565 (72.5%) of all the analyzed articles. The list of the 10 journals with JCR and highest absolute numbers of analyzed articles contained the following, in decreasing order: 1st *Revista de Nutrição* (n=177); 2nd *Cadernos de Saúde Pública* (n=84); 3rd *Revista de Saúde Pública* (n=67); 4th *Ciência & Saúde Coletiva* (n=50); 5th *Jornal de Pediatria* (n=36); 6th *Acta Amazônica* (n=21); 7th *Revista Brasileira de Medicina do Esporte* (n=18); 8th *Revista Latino-Americana de Enfermagem* (n=13); 9th *Saúde e Sociedade* (n=11); and 10th *Acta Cirúrgica Brasileira* (n=9) (Table 1).

The five journals with largest JCR values for 2015, in descending order, were: 1st *Revista Brasileira de Psiquiatria* (JCR=2.181); 2nd *Jornal de Pediatria* (JCR=2.062); 3rd *Memórias do Instituto Oswaldo Cruz* (JCR=1.789); 4th *Journal of Venomous Animals and Toxins including Tropical Diseases* (JCR=1.488); and 5th *Brazilian Journal of Infectious Diseases* (JCR=1.412). The journal *Revista de Nutrição* ranked 26th place in the distribution (JCR=0.446) (Table 1).

Of the 32 journals with JCR, 14 (43.8%) were not classified by Qualis 2014 in the area of Nutrition evaluated by CAPES. The area of

**Table 1.** Distribution of 32 journals of the Scientific Electronic Library Online (SciELO) database, which published articles on nutrition, that possessed a Journal Citation Reports (JCR) impact factor, according to the number of published articles, in the Qualis 2014 Nutrition Area and Qualis 2014 knowledge area of the journal.

Knowledge area/Journal name	Number of articles	JCR 2015	Qualis Nutrition area 2014	Qualis journal area 2014
<i>Revista de Nutrição</i>	177	0.446	B2	B2
<i>Cadernos de Saúde Pública</i>	84	0.920	B1	A2
<i>Revista de Saúde Pública</i>	67	1.283	B1	A2
<i>Ciência &amp; Saúde Coletiva</i>	50	0.669	B2	B1
<i>Jornal de Pediatria</i>	36	2.062	B2	B2, B2, B3*
<i>Acta Amazônica</i>	21	0.408	No	B1
<i>Revista Brasileira de Medicina do Esporte</i>	18	0.173	B3	A2
<i>Revista Latino-Americana de Enfermagem</i>	13	0.687	B3	A1
<i>Saúde e Sociedade</i>	11	0.246	B3	B2
<i>Acta Cirúrgica Brasileira</i>	9	0.580	No	B3, B3, B1*
<i>Food Science and Technology (Campinas)</i>	8	0.729	B2	B1
<i>São Paulo Medical Journal</i>	7	0.955	B2	B3, B3, B3*
<i>Archives of Endocrinology and Metabolism Clinics</i>	7	1.028	B3	B3, B2, B3*
<i>Clinics</i>	6	1.328	B1	B2, B2, B2*
<i>Acta Paulista de Enfermagem</i>	6	0.294	No	A2
<i>Memórias do Instituto Oswaldo Cruz</i>	5	1.789	No	A2
<i>Brazilian Journal of Medical and Biological Research</i>	4	1.146	B2	B2, B2, B2*
<i>Journal of Venomous Animals and Toxins Including Tropical Diseases</i>	4	1.488	No	B3, B3, No*
<i>Revista da Escola de Enfermagem da USP</i>	4	0.415	B3	A2
<i>Texto &amp; Contexto – Enfermagem</i>	4	0.134	No	A2
<i>Brazilian Journal of Pharmaceutical Sciences</i>	4	0.485	No	B2
<i>Brazilian Journal of Infectious Diseases</i>	3	1.412	No	B2, B2, B2*
<i>Jornal Brasileiro de Pneumologia</i>	3	1.019	No	B2, B2, B2*
<i>Química Nova</i>	3	0.617	No	B2
<i>Arquivos de Neuro-Psiquiatria</i>	2	0.937	B2	B3, B2, B2*
<i>Anais Brasileiros de Dermatologia</i>	2	0.880	B4	B3, B2, B3*
<i>Arquivos Brasileiros de Cardiologia</i>	2	1.194	B2	B2, B2, B2*
<i>Revista Brasileira de Psiquiatria</i>	1	2.181	No	B2, B2, B2*
<i>Acta Ortopédica Brasileira</i>	1	0.600	No	B4, B4, B3*
<i>Arquivos Brasileiros de Oftalmologia</i>	1	0.494	No	B3, B3, B3*
<i>Revista Brasileira de Reumatologia</i>	1	0.748	B2	B2, B2, B2*
<i>Brazilian Journal of Physical Therapy</i>	1	0.898	No	A2
Total	565			

Note: \*Qualis 2014 areas of Medicine I, II, and III, respectively.

Nutrition was not classified in any journal in the upper assessment strata of Qualis (A1 and A2), with the 32 journals classified among the strata B1 to B4. The distribution of the classification of the 32 journals in absolute numbers were as follows: B1 (n=3); B2 (n=9); B3 (n=5); and B4 (n=1) (Table 1).

For the 12 areas of assessment, the 32 journals with JCR were classified among the strata A1 to B4, with A1 (n=1); A2 (n=8); B1 (n=3), B2 (n=13), B3 (n=6), and B4 (n=1) (Table 1).

Table 2 shows the distribution of the 53 journals that did not possess JCR according to the parameters analyzed.

The 53 journals without JCR published 214 (27.5%) of all the analyzed articles. The list of the 10 journals without JCR and with highest absolute numbers of analyzed articles follows the following descending order: 1st *Revista Paulista de Pediatria* (n=25); 2nd *Revista Brasileira de Saúde Materno Infantil* (n=21); 3rd *Revista Brasileira de Terapia Intensiva* (n=13); 4th *História*,

**Table 2.** Distribution of 53 journals of the Scientific Electronic Library Online (SciELO) database, which published articles on nutrition, without a Journal Citation Reports (JCR) impact factor, according to the number of published articles, in the Qualis 2014 Nutrition Area and Qualis 2014 knowledge area of the journal.

Knowledge area/Journal name	Number of articles	Qualis Nutrition area 2014	Qualis journal area 2014
<i>Revista Paulista de Pediatria</i>	25	B4	B3, B3, No*
<i>Revista Brasileira de Saúde Materno Infantil</i>	21	B4	B3, B3, B4*
<i>Revista Brasileira de Terapia Intensiva</i>	13	B4	B3, B4, B3*
<i>História, Ciências, Saúde-Manguinhos</i>	12	No	A1
<i>Revista Brasileira de Epidemiologia</i>	10	No	B1
<i>Revista da Associação Médica Brasileira</i>	10	B2	No, B2, No*
<i>Arquivos de Gastroenterologia</i>	10	B4	B3, B2, B5*
<i>Arquivos Brasileiros de Cirurgia Digestiva</i>	9	B4	B3, B4, B3*
<i>Physis: Revista de Saúde Coletiva</i>	8	B4	B1
<i>Revista Brasileira de Ginecologia e Obstetrícia</i>	7	B4	B3, B3, B3*
<i>Revista Brasileira de Enfermagem</i>	7	B4	A2
<i>Interface: Comunicação, Saúde, Educação</i>	6	B4	No
<i>Revista do Colégio Brasileiro de Cirurgiões</i>	6	No	B3, B3, B1*
<i>Cadernos Saúde Coletiva</i>	5	B4	B3
<i>Einstein (São Paulo)</i>	5	B4	B2
<i>Revista Brasileira de Geriatria e Gerontologia</i>	5	B4	B4, No, No*
<i>Ciência &amp; Educação (Bauru)</i>	4	No	A2
<i>Revista Gaúcha de Enfermagem</i>	3	No	B1
<i>Archives of Clinical Psychiatry</i>	2	No	No, No, No*
<i>Brazilian Journal of Psychiatry</i>	2	B4	B3, B3, No*
<i>Revista Brasileira de Saúde Ocupacional</i>	2	No	No, No, No*
<i>Revista da Sociedade Brasileira de Medicina Tropical</i>	2	B2	B2, B2, B3*
<i>Revista Brasileira de Hematologia e Hemoterapia</i>	2	No	B3, B3, No*
<i>Revista do Instituto de Medicina Tropical de São Paulo</i>	2	No	B2, B2, B3*
<i>Escola Anna Nery</i>	2	No	B1
<i>Revista Brasileira de Ciências do Esporte</i>	2	B4	B1
<i>Revista Brasileira de Cineantropometria &amp; Desempenho Humano</i>	2	B4	B1
<i>Revista Brasileira de Educação Física e Esporte</i>	2	No	B1
<i>Revista CEFAC</i>	2	No	B1
<i>Psicologia USP</i>	2	No	A2
<i>Boletim do Museu Paraense Emílio Goeldi (Ciências Humanas)</i>	2	No	A2
<i>Epidemiologia e Serviços de Saúde</i>	1	No	B3
<i>Saúde em Debate</i>	1	No	No
<i>Trabalho, Educação e Saúde</i>	1	No	B1
<i>International Archives of Otorhinolaryngology</i>	1	No	B4, B4, B4*
<i>Jornal Brasileiro de Nefrologia</i>	1	No	B3, B3, No*
<i>Jornal Vascular Brasileiro</i>	1	B4	B3, B3, B4*
<i>Radiologia Brasileira</i>	1	No	B2, B2, B4*
<i>Audiology: Communication Research</i>	1	No	B1
<i>CoDAS</i>	1	No	B1
<i>Cadernos de Pesquisa</i>	1	No	A1
<i>Educação &amp; Sociedade</i>	1	No	A1
<i>Estudos Avançados</i>	1	No	No
<i>Interações (Campo Grande)</i>	1	No	B2
<i>Machado de Assis em Linha</i>	1	No	A1
<i>Anais do Museu Paulista: História e Cultura Material</i>	1	No	B1
<i>Brazilian Journal of Food Technology</i>	1	B4	B4
<i>Journal of Seed Science</i>	1	No	B4
<i>Dementia &amp; Neuropsychologia</i>	1	No	B1
<i>Estudos de Psicologia (Campinas)</i>	1	No	A1
<i>Estudos de Psicologia (Natal)</i>	1	No	A1
<i>Revista de Administração Contemporânea</i>	1	No	A2
<i>Revista de Administração Pública</i>	1	No	A2
Total	214		

Note: \*Qualis 2014 areas of Medicine I, II, and III, respectively.

*Ciências, Saúde – Manguinhos* (n=12); 5th *Revista Brasileira de Epidemiologia* (n=10); 6th *Revista da Associação Médica Brasileira* (n=10); 7th *Arquivos de Gastroenterologia* (n=10); 8th *Arquivos Brasileiros de Cirurgia Digestiva* (n=9); 9th *Physis: Revista de Saúde Coletiva* (n=8); and 10th *Revista Brasileira de Ginecologia e Obstetrícia* (n=7) (Table 2).

Of the 53 journals without JCR, 34 (64.2%) were not classified by Qualis 2014 in the area of Nutrition evaluated by CAPES, the others were classified in the strata B2 (n=2) and B4 (n=17) (Table 2).

For the 12 areas of evaluation, the 53 journals without JCR were classified among the strata A1 to B5, with A1 (n=6), A2 (n=6), B1 (n=13), B2 (n=6), B3 (n=12), B4 (n=4), B5 (n=1), and not classified (n=5) (Table 2).

The journal *Revista de Nutrição* received the following evaluations in Qualis 2014, according to the 12 areas of assessment investigated: B1 (Nursing, Physical Education, and Psychology); B2 (Nutrition, Public Health, and Interdisciplinary); B3 (Medicine I, II, and III; Food Science and Technology; and Pharmacy); and not classified (Education, History, and Administration) (Table 3).

## DISCUSSION

The distribution of the 779 analyzed articles among the 85 journals in distinct knowledge areas denotes the multidisciplinary character of the scientific field [40] of Nutrition. Distinct analyses on the science of nutrition both in the global context, as in Brazil, direct their multidisciplinary (interdisciplinary and/or trans-disciplinary) character to linking biological, social, and environmental dimensions. Nevertheless, the hegemony of the biomedical paradigm [41] has been demonstrated throughout the historical process of the establishment, consolidation, and development of this scientific field [2,6,42-48].

It should be noted that the CAPES Document on the Nutrition Area (2013) [13], also from an interdisciplinary perspective, conceives that "Nutrition is a scientific field in which knowledge and expertise are produced with specific characteristics of Clinical Nutrition, Basic and Experimental Nutrition, Food Science and Technology Applied to Health, Food and Nutrition in Public Health, and Social and Human Sciences in Food and Nutrition" (p.1).

When we observe the distribution of the 779 articles under the 12 evaluation areas

**Table 3.** Qualis for the journal *Revista de Nutrição* according to the 12 *Coordenação de Aperfeiçoamento de Pessoal de Nível Superior* (CAPES) knowledge areas in 2014.

CAPES knowledge areas	Qualis for <i>Revista de Nutrição</i> in 2014
Physical Education, Physiotherapy, Speech Therapy	B1
Nursing	B1
Psychology	B1
Interdisciplinary and others	B2
Nutrition	B2
Public Health	B2
Food Science and Technology	B3
Pharmacy and Chemistry	B3
Medicine I	B3
Medicine II	B3
Medicine III	B3
Administration	Not classified
Education, Arts, Social Sciences	Not classified
History	Not classified



analyzed, we identified that 89.6% (n=698) of the analyzed articles are linked to the larger area of knowledge recognized by CAPES as Health Sciences [39] (Physical Education, Physiotherapy, Speech Therapy, Nursing, Pharmacy, Medicine I, II and III, Nutrition, Dentistry and Public Health). The articles linked to Agricultural Sciences (Food Science and Technology) and the so-called College of Exact Sciences, Technologies and Multidisciplinary [39] (Chemistry and Interdisciplinary) represent 5.9% (n=46) of the total analyzed. The articles linked to the Humanities [39] (Administration, Social Sciences, Education, History, Arts, Psychology) represent 4.5% (n=35) of the total analyzed.

Looking at the distribution of the journals with the highest absolute number of articles analyzed confirms the *Revista de Nutrição* as the journal with the highest concentration of articles (n=177). The *Revista de Nutrição* was admitted to the SciELO database in February 2002; however, a part of its complete collection of articles had been available online since 1997, the year in which this electronic library became operational [38]. Therefore, since 1997 to the present day, it has been the only specific journal in the scientific field of Brazilian Nutrition to be admitted to this database, and the only one from the field that possesses a JCR impact factor. In addition, by publishing articles in various subareas of knowledge in Nutrition (recognized by the CAPES Nutrition Area Document [13]), a greater number of publications have been attracted. In the list of journals with the largest number of articles published on the topic of Nutrition, those linked to Public Health are highlighted, (*Cadernos de Saúde Pública*, *Revista de Saúde Pública*, *Ciência & Saúde Coletiva*, *Saúde e Sociedade*, *Revista Brasileira de Epidemiologia*, and *Physis: Revista de Saúde Coletiva*); together, they published 230 articles. Next are the 35 journals of Medicine that published 211 articles. The participation of Humanities journals was greatly reduced. These findings corroborate results from previous studies [4-6,23] that also point to the

importance of journals in the dissemination of intellectual output in the area, and reinforcement of the hegemony of the biomedical paradigm [41] in the scientific field [40] of Brazilian Nutrition [36,37,45,46].

Observing the distribution of the 32 journals with JCR impact factor values, which ranged from 0.134 to 2.181, infers that they would be classified by the Nutrition Area Document 2013 [13] as Qualis B2 (JCR between 0.001 and 1.064) and Qualis B1 (JCR between 1.065 to 2.470). In turn, the analysis of the distribution of periodicals according to JCR values for 2015 identified that almost all belong to the area of knowledge recognized by CAPES as Health Sciences [39], with the exception of four journals (*Memórias do Instituto Oswaldo Cruz*, Food Science and Technology, *Química Nova*, and *Acta Amazônica*). In the distribution hierarchy of the number and higher value JCRs, Medicine (I, II and III) had the largest number of journals with JCR (n=17), as well as those with higher values. It should be noted that all journals (n=15) linked to the so-called College of Humanities [39] (Administration, Education, History, and Psychology) had no JCR in 2015, affirming the hegemony of the biomedical sciences pointed out previously [36,37,45,46].

Observing how the distinct evaluation areas classified their specific journals, we deduced that the majority (Administration; Physical Education, Physiotherapy, and Speech Therapy; Education, Social Sciences, and Arts; Nursing; History; Interdisciplinary; Psychology; and Public Health), except for Food Science and Technology; Pharmacy and Chemistry; Medicine I, II and III; and Nutrition, performed procedures for valuation/induction of their specific national journals indexed in SciELO database. For eight of the analyzed areas, their specific journals were clearly induced to the upper strata of Qualis (A1, A2, and B1).

Taking the journal *Revista de Nutrição* as reference for analysis, it is emphasized that in the three-year period from 2010 to 2012, according

to the Area Document 2013 [13], "by its representation in the area, this journal was classified with Qualis B2, it was induced in that evaluation to Qualis B1" (p.15). In Qualis 2014, this journal obtained distinct classifications among the 12 evaluation areas (B1, B2, B3, and not classified). For the area of Nutrition, this journal was classified as B2 and, therefore, relegated to a lower level, even though it is the journal that had the highest number of total articles analyzed. This procedure seems to denote a tightening of the classification criteria used in the Nutrition area, whereas the areas that classify the journal as Qualis B1 (Physical Education; Physiotherapy and Speech Therapy; Nursing; and Psychology) denote the adoption of more flexible criteria.

The more rigorous classification of the Nutrition area was not limited to the journal *Revista de Nutrição*, both for the 32 journals that possessed JCR. As for the 53 which did not, it was observed that in this area 48 (56.5%) of the total analyzed journals were not classified, whereas 27.1% of journals were classified in the lower strata B3 (n=5) and B4 (n=18). Compared with the other areas analyzed, the most severe classification criteria were applied to Nutrition, indicating an emphasis or centrality in the JCR parameter. This is an understandable strategy but contradictory for one of the newest areas of CAPES evaluation, as it searches for identity and legitimacy [2,4-6]. As an old composer from *Bahia* would say "Narcissus thinks that everything is ugly except for what he sees in the mirror [49]".

In a study on the Qualis database and the influence of the use of journals in the area of Psychology, Jacon [17] also identified different rankings for different areas of the same journals. From the findings, she recommended the need to expand the links between the areas of evaluation by applying similar classification criteria, in addition to establishing clear and objective qualitative and quantitative criteria.

In general, the results of our study share the findings of the analysis carried out by Costa [23], profiling the Qualis journals in the Public

Health area in the three-year period from 2007 to 2009. According to Costa [23], from the journal universe that composes the Qualis of Public Health (n=1,642), there is a dominance of those linked to Biomedical Sciences, accounting for 70.0% (n=1,147), compared with 28.0% of those linked to the Social Sciences and Humanities. The journals classified in the higher value strata of Qualis (A1, A2, and B1) were also those of the Biomedical areas, representing 31.1% (n=510), compared with only 3.4% (n=56) of those in the Social Sciences and Humanities. Of the Brazilian journals, none were classified in Qualis strata A1; only 1.1% (n=2) as A2; and 93.3% (n=626) in the lower strata of B3 to C. The average H-index of journals published in Brazil in the Public Health area was six times higher than that in the area of Social Sciences and Humanities. Among the conclusions presented, Costa [23] argued that the valuation of converging intellectual production, with the pattern of disclosure of Biomedical Sciences, disregards the particularities of the conditions for the diffusion of the various epistemic cultures (Social Sciences and Humanities) and has deepened the structural discrepancies between programs in the area of Public Health (p.695).

In a study on the performance of the graduate programs in nutrition in the triennial evaluation of CAPES from 2007 to 2009, Olinto *et al.* [6] presented a mapping of the scientific output (Qualis journals) in the area programs. The results of such study are similar and, with the caveat of our limitations, can be compared with the results of our study. According to Olinto *et al.* [6], of the range of articles published in the three-year period (n=2,168), 10.9% was in journals of Qualis A1 and A2, 48.8% in Qualis B1 to B3, and 40.3% in Qualis B4 and B5. In the list of the 15 journals from the strata A1 and A2 with the highest number of published articles, all are foreign, with links almost exclusively to Biomedical Sciences and, to a lesser extent, the area of Food Science and Technology, whose impact factor ranged from 2.452 to 4.822. The Brazilian journals that had the highest number of published articles

were *Revista de Nutrição* (n=100), *Cadernos de Saúde Pública* (n=63), and *Ciência e Saúde Coletiva* (n=63). In the list of the 20 journals from strata B1 to B5 with the highest number of published articles, 85.0% (n=17) are Brazilian, linked almost exclusively to Biomedical Sciences and, to a lesser extent, the area of Food Science and Technology; only two Brazilian journals presented an impact factor. It is important to note that in the list presented by Olinto *et al.* [6], among the 20 journals from the strata B1 to B5 with the highest number of published articles, five national journals appeared to have not been indexed in the SciELO database and classified in the Qualis stratum B5; these journals are *Nutrição em Pauta* (n=34), *Nutrire* (n=33), *Revista Brasileira de Nutrição Clínica* (n=31), *Nutrição Brasil* (n=27), and *Higiene Alimentar* (n=26). In their analysis, Olinto *et al.* [6] emphasized the need for improving the publication profile of journals of the upper strata A1 and A2 and increasing the proportion in the strata equal or superior to B2, although they recognized the qualitative and quantitative increase in intellectual production from all programs.

A similar scenario had already been conceived in 2006 by two other publications in the nutrition area [4,5]. Based on data from the *Evaluation Booklet* of CAPES for the years 2002, 2003, and 2004, the authors traced a descriptive overview of the intellectual production of nine graduate programs in nutrition strictly bound to the area of Medicine II [2]. At the time, the previous evaluation system was still in force; it was based on the Qualis classification for international (A, B, C) and national (A, B, C) journals. The authors reported a reduction in the percentage of publications in international media, classified as A and B, between the years 2002 and 2004, from 21% to 16% in A-level and from 17% to 13% in B-level international journals. In the Qualis database of 2004, seven media linked to the area of nutrition were identified, none with the international Qualis definition: *Revista de Nutrição* (National A), *Horticultura Brasileira* (National A), *Higiene Alimentar* (National B),

*Revista Brasileira de Nutrição Clínica* (National B), *Nutrição Brasil* (National C), *Nutrição em Pauta* (National C), and *Nutrire* (National C) [4,5]. Among their conclusions and recommendations, Kac *et al.* [4] proposed, in the medium term, the adoption of a qualification strategy for the better known journals within the area and, in the long term, the possibility and desire to create new means for the dissemination of intellectual production.

In relation to the national means of circulation of scientific output on Nutrition, the scenario outlined by Kac *et al.* [4,5] for the years 2002 to 2004 and Olinto *et al.* [6] for 2007 to 2009 showed no substantial changes. Of note is the preservation of the journal *Revista de Nutrição*, the one journal specific to the area of Nutrition indexed in the analyzed database, which continues to concentrate the bulk of intellectual production. However, the expectation regarding the internationalization parameters of the intellectual production of graduate programs in nutrition, in the strict sense, compared with the idealized stimuli, and those that have been achieved by the PNPG VI (2011 to 2020), seem promising. It remains to analyze and publish the data for the three-year period from 2010 to 2012. It is still unknown what the data will say for the four-year period from 2013 to 2016.

In summary, the analysis of the collection of articles selected to define the state of graduate evaluation in Brazil points to, in a consensual form, the relevance of the SNPG coordinated by CAPES in the process of expansion and qualification of higher education, graduate education, and research in the country. The inductive policy promoted by CAPES in the management, evaluation, and funding of graduate studies in Brazil, whose results are expressed incontrovertibly in the intense expansion of the number of courses and postgraduate programs, masters, and doctoral and scientific publications, is also recognized as positive, by consensus, through the set of analyzed articles [2,4-7,14-34]. Other features of the graduate evaluation system identified as

positive, such as the process of peer review and transparency of the evaluation criteria and information, are also evidenced by the articles analyzed [15,17,25,31].

On the one hand, the criticisms of the system are also common in the analyzed literature. The most frequent concerns the controversy over “academic productivity” influenced by the SNPG that could generate both positive and negative effects, such as competitiveness/rivalry between researchers, programs, and institutions [16-17, 23-25,28-33]. Another criticism concerns the linkage between the actions of evaluation and financing of the SNPG, a system based on rewards and punishments for the performance of programs to guarantee the entrance/exit, elevation/preservation/fall of concepts, number of scholarships, and volume of financial aid, among others. On the other hand, despite having stimulated the expansion and qualification of postgraduation, the process may also be contributing to the persistence of imbalances and inequalities between researchers, programs, institutions, and regions [15,16,24,25,28-33]. Regarding the methodology used by the SNPG to classify journals (Qualis journals), the specific object of this work, a good portion of the selected literature considers that the assessment process of CAPES overvalues the quantitative over the qualitative and the international over the national/local [15-17,20,21,24-27,31,33].

## CONCLUSION

This analysis of the scientific output on Nutrition in the SciELO database, which took as a reference the evaluation criteria of the Qualis Journals 2014, enabled us to conclude that the CAPES Nutrition area appears to still preserve the evaluation parameters prevailing in the area of Medicine II, or establishes even stricter evaluation criteria. It appears that the field of Nutrition has not won its identity, relative autonomy, and desired strength [2,4-6], “nor did it create its own evaluation criteria, more in line with the reality

of the field” (Olinto *et al.*, p.924) [6], remaining submissive to the main features of the hegemonic system of graduate evaluation, which is focused on quantitative criteria, indices of productivity, citation, visibility, and circulation of the produced knowledge [23-28], characteristics of Biomedical Sciences, Exact, and Natural.

For eight of the 12 knowledge areas analyzed (Administration; Physical Education, Physiotherapy and Speech Therapy; Education, Social Sciences and Arts; Nursing; History; Interdisciplinary; Psychology; and Public Health), their specific journals were induced clearly to the upper levels of Qualis (A1, A2, and B1). The flexibility/rupture of these eight areas of knowledge regarding the hegemonic standard of evaluation of the 2014 Qualis Journals (the appreciation of journals exclusively from the JCR or SJR) seems a salutary and counter-hegemonic movement of scientific fields seeking identity, autonomy, authority, legitimacy and social recognition, not in heteronomy and uniformity, but in uniqueness, diversity, and plurality [15-17, 23,28].

In this sense, we borrow the reflection of Carvalho & Manoel [50] on the distinction between two media of ideas, paradigms, scientific knowledge, and expertise (articles and books) and, analogously to the reflection that the authors made on the nature of the book and its impact as an indicator of intellectual output in the area of health; we also inquire: how, why, and for whom is the science of nutrition?

In an attempt to reflect on these questions, we invite the reader (the scientific community of Nutrition, Health Sciences, Sciences in general and the general population that accesses the SciELO database or has access to this article) to rescue the concepts of *paradigm*, *scientific community*, *normal science*, and *scientific revolution*, as proposed by Kuhn [41] and acquaint themselves with the concepts of the *scientific field*, *scientific capital*, *symbolic capital*, *scientific habitus*, and *homo academicus* as proposed by Bourdieu [40] and procedures that we performed in previous

articles when we began our reflections on Brazilian graduate studies in Nutrition [36,37].

In this direction, we dare to defend a greater appreciation of the journals indexed in the SciELO database by SNPG, as they constitute the main media of circulation/diffusion/dissemination of ideas, knowledge, expertise, theories, and scientific paradigms among the participants of the local and national scientific communities.

Against the inexorable process of scientific globalization (internationalization) that the PNPV VI (2011 to 2020) authenticated and that the SNPG of CAPES applies, it is left to the national scientific community to develop incentives for valorization and qualification of Brazilian journals, bearing in mind the strong correlation of forces that establish themselves around the circulation of ideas, knowledge, theories, and paradigms in the international context.

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