

## Eighty years of undergraduate education in nutrition in Brazil: An analysis of the 2009-2018 period

### *Oitenta anos de graduação em Nutrição: uma análise do período 2009-2018*

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#### ABSTRACT

##### Objective

To carry out an analysis of postgraduate education in Nutrition in Brazil in the period 2009-2018, including distance learning.

##### Methods

The article presents a historical-documentary analysis of the trajectory of Nutrition courses from 2009 to 2018. The bibliographic survey was carried out in the electronic databases of the Scientific Electronic Library Online, the National Library of Medicine, Google Academic databases, and through data collection in government websites and other institutions.

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How to cite this article

Neves J, Zanlouremsi CB, Domene SMA, Batista B, Calado CLA, Vasconcelos FAG. Eighty years of undergraduate education in nutrition in Brazil: An analysis of the 2009-2018 period. *Rev Nutr.* 2019;32:e180158. <http://dx.doi.org/10.1590/1678-9865201932e180158>



## Results

In December 2018, there were 709 face-to-face and 1,094 distance learning Undergraduate Courses in Nutrition in the country. In the period, there was a 181.5% increase in the number of face-to-face courses, being 195.1% in the private sector, responsible for 89.1% of the total courses in the country. The highest concentration identified was in the Southeast Region did not change substantively in the period.

## Conclusion

With 1,803 undergraduate courses in Nutrition in Brazil, of which the majority is composed of distance learning courses, the current scenario may be the most dramatic in the history of nutrition education in Brazil. Care must be taken to ensure that it is consistent, marked by opportunities for learning in society, in which the student can develop an investigative, critical, innovative spirit, having their professional identities clear in a multidisciplinary work team. The expansion of the offer of undergraduate courses in Nutrition did not correct regional asymmetries.

**Keywords:** Distance learning. Nutrition course. University graduate.

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## RESUMO

### Objetivo

*Realizar análise da trajetória da Graduação em Nutrição no Brasil no período de 2009 a 2018, incluindo a formação à distância.*

### Métodos

*Análise histórico-documental do período 2009 a 2018. Realizou-se levantamento bibliográfico sistematizado nas bases Scientific Electronic Library Online, National Library of Medicine e Google Acadêmico, e coleta de dados em sites eletrônicos de órgãos governamentais e outras instituições.*

### Resultados

*Em dezembro de 2018, existiam 709 cursos presenciais e 1.094 da modalidade Educação a Distância na Graduação em Nutrição no país. No período, ocorreu um aumento de 181,5% no número de cursos presenciais, sendo de 195,1% no setor privado, responsável por 89,1% do total de cursos do país. A maior concentração na Região Sudeste não se modificou de maneira substantiva no período.*

### Conclusão

*Com 1.803 Cursos de Graduação em Nutrição no Brasil, dos quais a maioria na modalidade à distância, o atual cenário talvez seja o mais dramático em toda a história da formação de nutricionistas no país. É preciso cuidar para que a formação seja consistente, com oportunidades de aprendizagem junto à sociedade, em que o graduando possa desenvolver espírito investigativo, crítico, inovador e com clareza de sua identidade profissional em uma equipe multidisciplinar de trabalho. A ampliação da oferta de cursos de graduação em Nutrição não corrigiu assimetrias regionais.*

**Palavras-chave:** Ensino à distância. Curso de nutrição. Graduação.

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## INTRODUCTION

In Brazil, the history of the profession of nutritionist began in 1939, with the introduction of the technical courses that gave rise to Undergraduate Courses in Nutrition. In 2019, the trajectory of the professional training of the nutritionist completes 80 years of history in the country [1-3].

The expansion of the number of undergraduate courses in Nutrition in Brazil has been delimited by different contexts and discussions about training and professional identity [2,3]. Between the creation of the first four courses in the late 1940s and the early 1970s, only three others were started; thus, at that time about 570 vacancies were offered annually, all within public institutions [2,3]. The

University Reform of 1968, which in its conception provided that public education with research training be supported by other training modalities, allowed the installation of the business model of higher education [4]. Since 1976, due to the incentives by the *II Programa Nacional de Alimentação e Nutrição* (II PRONAN, II National Program of Food and Nutrition), there was a first movement of expansion of the private courses. In the period from 1976 to 1996, the number of courses increased to 45, being 22 in public and 23 in private institutions, offering 3,643 vacancies per year [2,3]. Since 1996, with the promotion of the *Lei de Diretrizes e Bases da Educação* (LDB, Law of Brazilian Education Guidelines and Bases) and the flexibility of the supply conditions, there has been a new expansion, especially in private institutions. Therefore, between January 1997 and August 2009, the year in which the profession of nutritionist completed 70 years of existence in Brazil, the total of Nutrition Undergraduate Courses corresponded to 391: 67 in the public sector and 324 in the private sector, offering 49,185 vacancies per year [3].

In addition to the LDB, public policies such as the *Programa Universidade para Todos* (ProUni, University for All Program) and the creation of the *Fundo de Financiamento ao Estudante de Ensino Superior* (FIES, Higher Education Student Fund) favored the strengthening of the private sector in higher education from the 2000s onwards. The adoption of *Educação à Distância* (EaD, Distance Learning) in Higher Education in health care courses [5,6], despite the opposition to any undergraduate courses in the area of health taught through distance learning, approved by the National Health Council (Resolution No.515 of October 7, 2016) [7].

In the last ten years, although studies on the professional training of nutritionists in Brazil [8-16] have been identified, no papers were found with the analysis of the evolution of the number of courses and vacancies.

The present article seeks to conduct an analysis of the trajectory of Undergraduate Courses in Nutrition in Brazil in the period from 2009 to 2018, including distance learning courses.

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## METHODS

This is a historical-documentary analysis [17,18] of the trajectory of Undergraduate Courses in Nutrition in Brazil from 2009 to June 2018.

In order to obtain the data, information and documents about the trajectory of Undergraduate Courses in Nutrition in Brazil in the period were identified through exploratory visits to the websites of government agencies and other institutions, such as: (1) Brazilian Ministry of Education, for the collection of information about the Undergraduate Courses in Nutrition, Physical Education, Nursing, Pharmacy, Physiotherapy, Medicine and Dentistry; (2) Higher Education Institutions, to check data obtained regarding the provision of Nutrition courses, the type of course and number of vacancies.

A bibliographic systematized survey was also carried out in the Scientific Electronic Library Online (SciELO), National Library of Medicine (PubMed) and Google Academic databases. The following key words and their respective correspondents in the English language were used: nutritionist, undergraduate, higher education, training, college, university, teaching, course and nutrition courses.

## RESULTS AND DISCUSSION

### The evolution in the number of face-to-face undergraduate courses in Brazil (August 2009 - December 2018)

According to the data shown in Table 1, of the total of 391 undergraduate courses in Nutrition available in August 2009, 67 were held in public institutions and 324 were held in private institutions, with 49,185 annual vacancies [3]. As early as December 2018, of the total of 709 existing courses, 77 were held in public institutions and 632 in private institutions, offering a total of 101,691 vacancies per year [19]. Therefore, between August 2009 and December 2018, there was a 181.5% increase in the number of face-to-face courses, with an increase of 195.1% in the private sector, which is responsible for 89.1% of the total of undergraduate courses in Nutrition in the country. In turn, the increase in the number of vacancies doubled in the period (206.8%), mostly in the private sector [3, 19].

**Table 1.** Distribution of the number of courses and vacancies in the face-to-face undergraduate courses in nutrition in Brazil in 08/2009, 09/2016 and 12/2018.

Month/Year	Undergraduate courses in nutrition				Vacancies	
	Public Institutions	Private Institutions	Total	Increase (%)	Total	Increase (%)
08/2009*	67	324	391	100.0	49.185	100.0
09/2016 <sup>1</sup>	78	514	592	151.4	83.150	169.1
12/2018 <sup>1</sup>	77	632	709	181.3	101.691	206.8

Note: \*Elaborated from data published by Vasconcelos & Calado [3].

<sup>1</sup>Elaborated from data published by Calado [19].

When analyzing the proportion of undergraduate courses in private institutions, in relation to public institutions, we can see an increase from 4.8 in 2009 to 8.2 in 2018. As Vasconcelos & Calado [3] observed, in 2018, after ten years of that first study, the highest expansion remains in the private sector.

According to the data shown in Table 2, it can be observed that the 391 face-to-face Undergraduate Courses in Nutrition existing in August 2009, were distributed in 26 states of the Federation; at the time, the state of *Roraima* did not have a face-to-face Undergraduate Course in Nutrition [3].

In December 2018, the 709 existing Undergraduate Courses in Nutrition were distributed among the 27 states of the Federation [19], with a slight change occurring among the ten largest concentrations per state: *São Paulo* (158 courses or 22.3% of the total number), *Rio de Janeiro* (76 or 10.7%), *Minas Gerais* (71 or 10.0%), *Bahia* (59 or 8.3%), *Rio Grande do Sul* (37 or 5.2%), *Paraná* (34 or 4.8%), *Pernambuco* (31 or 4.4%), *Ceará* (25 or 3.5%), *Santa Catarina* (24 or 3.5%) and *Goiás* (20 or 2.8%) (Table 2).

Still according to Table 2, the ten states where the highest absolute increases occurred in the number of attendance courses of Nutrition Graduation between August 2009 and December 2018 were: *São Paulo* (50), *Rio de Janeiro* (43), *Bahia* (40), *Pernambuco* (23), *Ceará* (20), *Rio Grande do Sul* (16), *Mato Grosso* (12), *Santa Catarina* and *Paraíba* (11), *Distrito Federal*, *Maranhão*, *Pará* and *Sergipe* (10). In terms of relative increases, the ten states that verified the highest results were:

*Sergipe* (1000.0%), *Alagoas* and *Mato Grosso* (400.0%), *Pernambuco* (287.5%), *Pará* (250.0%), *Paraíba* (220.0%), *Bahia* (210.5%), *Maranhão* (166.7%), *Rio Grande do Norte* (140.0%), *Rondônia* (133.3%), and *Rio de Janeiro* (130.0%).

**Table 2.** Distribution and gap in the number of face-to-face undergraduate courses in Nutrition in Brazil, per state, in August 2009 and December 2018.

State	2009 (A) <sup>1</sup>		2018 (B) <sup>2</sup>		Gap (B-A)	%Gap (B-A)
	N	%	N	%		
<i>São Paulo</i>	108	27.6	158	22.3	50	46.3
<i>Minas Gerais</i>	71	18.2	71	10.0	0	0.0
<i>Rio de Janeiro</i>	33	8.4	76	10.7	43	130.3
<i>Paraná</i>	30	7.7	34	4.8	4	13.3
<i>Rio Grande do Sul</i>	21	5.4	37	5.2	16	76.2
<i>Bahia</i>	19	4.9	59	8.3	40	210.5
<i>Goiás</i>	13	3.4	20	2.8	7	53.8
<i>Santa Catarina</i>	13	3.4	24	3.5	11	84.6
<i>Distrito Federal</i>	9	2.3	19	2.7	10	111.1
<i>Espírito Santo</i>	9	2.3	12	1.7	3	33.3
<i>Pernambuco</i>	8	2.1	31	4.4	23	287.5
<i>Amazonas</i>	7	1.8	9	1.3	2	28.6
<i>Piauí</i>	7	1.8	13	1.5	6	85.7
<i>Maranhão</i>	6	1.5	16	1.8	10	166.7
<i>Paraíba</i>	5	1.3	16	2.3	11	220.0
<i>Rio Grande do Norte</i>	5	1.3	12	1.7	7	140.0
<i>Ceará</i>	5	1.3	25	3.5	20	400.0
<i>Mato Grosso do Sul</i>	5	1.3	12	1.7	7	140.0
<i>Pará</i>	4	1.0	14	2.0	10	250.0
<i>Mato Grosso</i>	3	0.7	15	2.1	12	400.0
<i>Rondônia</i>	3	0.7	7	1.0	4	133.3
<i>Alagoas</i>	2	0.5	10	1.4	8	400.0
<i>Amapá</i>	2	0.5	3	0.4	1	50.0
<i>Acre</i>	1	0.2	2	0.3	1	100.0
<i>Sergipe</i>	1	0.2	11	1.6	10	1000.0
<i>Tocantins</i>	1	0.2	1	0.1	0	0.0
<i>Roraima</i>	0	0.0	2	0.3	2	-
Total	391	100.0	709	100.0	318	81.3

Note: <sup>1</sup>Elaborated from data published by Vasconcelos & Calado [3]; <sup>2</sup>Elaborated from data published by Calado [19].

In 2009, 56.5% of the Nutrition Courses were concentrated in the Southeast Region of Brazil [3], which remained the region with the highest number of courses in 2018, with 44.6% of the total. In this period, the number of courses in the Northeast Region, which held 15.0% of the total number of courses in Brazil in 2009 [3], increased to 27.2% in 2018. This phenomenon reveals the potential for expansion in that region.

It should be noted that the expansion of the private sector coincides with the end of the military regime that lasted until 1986, with the establishment of the *Sistema Único de Saúde* (SUS,

Brazilian Unified Health System) in 1988, the year in which the Federal Constitution was enacted, and with the LDB in 1996. On the one hand, there was a great expansion in the number of courses, on the other, the LDB, the Health Reform and the National Health Conferences provided support for training projects committed to a comprehensive and universal assistance, as proposed by the SUS guidelines [11,13]. In turn, the *Diretrizes Curriculares Nacionais* (DCN, National Curricular Guidelines) in 2001 established provisions in the direction of strengthening training in defining the profile of the nutritionist and ratifying the social needs in the health field and the emphasis on SUS, as the guiding axis of the *Projetos Pedagógicos dos Cursos* (PPC, Pedagogical Projects of Courses) [12-15,20]. In the last three decades, it has been observed that private sector growth was maintained, not being reversed after 2003, when there was a relative increase in vacancies in public universities [3].

In a study conducted with 22 coordinators of Nutrition Undergraduate Courses in the city of *São Paulo*, *Vieira et al.* [16] observed contradictory positions regarding the use of concepts of Food and Nutrition Security in all areas of professional activity beyond a purely technical perspective. The role of SUS as a regulatory authority in nutrition training [7] required the incorporation of agreements with health services and with Food and Nutrition Units to establish extramural learning scenarios. Other fields of health also compete for these spaces [10].

When comparing the number of face-to-face courses in Nutrition with other health professions, such as Physical Education, Nursing, Pharmacy, Physiotherapy, Medicine and Dentistry [21], in June 2018, the following distribution was observed: Physical Education (1,432); Nursing (1,137); Physical Education (768); Nutrition (680); Pharmacy (640); Dentistry (380) and Medicine (380). It is a distribution order similar to that observed in August 2009 [3].

Despite the relevance of the expansion of vacancies to meet the demands of society, the number of dropouts is concerning. According to *Vieira et al.* [22] in 2015, there were 16,761 (30%) vacant positions in Nutrition courses. The percentage of dropouts is lower in public institutions ( $25\pm 4.8$ ) than in private ones ( $41.3\pm 8.0$ ), according to data obtained in 2006 [23].

The privatization of higher education in the fields of health was also discussed by *Vieira et al.* [22], where the authors draw attention to the importance of professional councils and educational associations. It is worth noting that for courses in Medicine, Dentistry and Nursing, the opening of new courses is appreciated by the Interinstitutional Commission of Human Resources, which works as an advisor to the National Health Council, a condition achieved after a successful action by the councils.

### **Emergency and accelerated expansion of Distance Learning undergraduate courses in nutrition in Brazil (January, 2014-December, 2018)**

The first courses offered in the area of health made available as Distance Learning Courses were Physiotherapy and Social Work in 2006; the beginning of this modality for Nutrition courses dates from 2014 [6,22].

The use of technologies for distance learning, as has been experienced for continuing education courses, brings a promising perspective to professionals working in distant or hard to reach places. A study by *Oliveira et al.* [6] showed the importance of the SUS Open University System (UNASUS), for ongoing professional training. However, according to the legislation governing the provision of EaD courses [24-27], PPC must follow the DCN, offer face-to-face tests, including an end-of-course written undergraduate thesis, and describe mandatory classroom activities.

In spite of the importance of the use of Information and Communication Technologies (ICT), for the democratization of education, it is evident the incompatibility of training in distance learning

for health-related professions [7]. However, this modality has experienced a growth rate much higher, in the last four years, than the one observed in face-to-face teaching since the opening of the first course in 1939 [1-3].

According to the data shown in Table 3, a total of 14 distance learning undergraduate courses were distributed in the states of *São Paulo* (5), *Pernambuco* (3), *Paraíba* (2), *Bahia*, *Ceará*, *Alagoas* and *Rio Grande do Norte* (1). From this moment on, an accelerated expansion of this modality of education has been observed: in 2016 there were a total of 646 courses, distributed by the 27 states of the country. In December 2018, the total number of distance learning undergraduate courses in Nutrition, expanded to a total of 1,094 courses, with the ten largest concentrations in the states of *São Paulo* (273), *Minas Gerais* (117), *Bahia* and *Pará* (75), *Paraná* (64), *Rio Grande do Sul* (52), *Rio de Janeiro* (48), *Mato Grosso* (38), *Pernambuco*, *Goiás*, *Mato Grosso do Sul* and *Ceará* (36), *Maranhão* and *Rio Grande do Norte* (18) and *Paraíba* (17), surpassing the number of face-to-face courses.

**Table 3.** Distribution of the Number of Distance Learning undergraduate courses in nutrition in Brazil, by state, in the years 2014, 2015, 2016, 2017, until December 2018.

State	2014	2015	2016	2017	2018 <sup>1</sup>
	N	N	N	N	N
<i>São Paulo</i>	5	5	79	128	273
<i>Minas Gerais</i>	-	-	87	102	117
<i>Bahia</i>	1	1	77	79	75
<i>Pará</i>	-	-	26	35	75
<i>Paraná</i>	-	-	49	55	64
<i>Rio Grande do Sul</i>	-	-	46	52	52
<i>Rio de Janeiro</i>	-	-	26	27	48
<i>Pernambuco</i>	3	3	20	29	36
<i>Mato Grosso</i>	-	-	37	42	38
<i>Goiás</i>	-	-	37	45	36
<i>Mato Grosso do Sul</i>	-	-	14	32	36
<i>Ceará</i>	1	1	9	15	36
<i>Santa Catarina</i>	-	-	26	27	29
<i>Piauí</i>	-	-	12	15	16
<i>Alagoas</i>	1	1	10	12	15
<i>Rondônia</i>	-	-	17	17	16
<i>Maranhão</i>	-	-	4	7	18
<i>Paraíba</i>	2	2	10	11	17
<i>Espírito Santo</i>	-	-	12	13	16
<i>Tocantins</i>	-	-	10	12	14
<i>Acre</i>	-	-	6	8	10
<i>Amazonas</i>	-	-	8	1	10
<i>Rio Grande do Norte</i>	1	1	8	18	18
<i>Distrito Federal</i>	-	-	10	12	15
<i>Amapá</i>	-	-	3	3	5
<i>Sergipe</i>	-	-	2	4	4
<i>Roraima</i>	-	-	2	3	5
Total	14	14	646	813	1,094

Note: <sup>1</sup>Elaborated from data published by Calado [19].



When comparing the number of distance learning undergraduate courses in Nutrition with other professions in the field of health [21], it is worth noting that this modality is not offered in Medicine and Dentistry courses. In December 2018, the number of distance learning undergraduate courses in Nutrition (1,094) was higher than those of all other health care careers [21].

The need for revision of the DCN was discussed by Soares & Aguiar [15], when the authors pointed out some weaknesses regarding the professional profile and the description of skills and competencies, which does not diminish the importance of this document as a reference for PPC, including distance learning courses.

The development of the necessary competences for the promotion of the Human Right to Adequate and Healthy Food in the perspective of the integrality of health care, demands articulated PPCs to the loco regional realities, with which they dialogue [8]. The introduction of distance learning courses in institutions that do not offer face-to-face nutrition courses is another aggravating factor in this scenario.

In this sense, the opposite manifestation of the National Health Council [7], regarding the authorization of courses for the training of health professionals in the distance learning modality becomes pertinent and timely. It should be noted that although this positioning has been ratified by the Federal Council of Nutritionists, between the years 2018 and 2019, the first groups of students in distance learning undergraduate courses in Nutrition in Brazil should be on their last year in university.

The Ordinance No.4.059 of 2004 [28] establishes the impossibility of offering distance learning for individual or collective health care disciplines. Therefore, when it comes to training for working at SUS, it is prerogative the interprofessional, humanistic, technical and face-to-face learning process; permeated by the teaching-service-community integration [9].

It contributes to the growth of private education, and especially to the growth in distance learning, the lack of investment by the State, partly determined by a fiscal adjustment process that is influenced by guidelines emanating from international organizations and prioritizes Basic Education [4,29].

The existence of learning scenarios and the experience of interprofessional work in this field is recognized as the most valuable strategy for the training of nutritionists. The contact with the determinants that lead to malnutrition, the conviviality with the reality in which individuals and groups are inserted, and the interlocution with the assistance teams are essential for the Nutrition student to develop their skills and competencies in an appropriate manner to the strengthening of their professional identities, which is still considered diffuse [10].

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## CONCLUSION

The expansion of undergraduate courses in Nutrition, much higher than the ability to graduate professors with masters' degrees and PhD for the composition of the teaching staff, is aggravated by the spectacular growth in the offer of courses in the distance learning modality.

The growth of the number of nutritionists shall respond to the society's demand for nutritional assistance in all fields of activity. More than expanding the availability of professionals, care must be taken to ensure that their training is consistent, marked by opportunities for learning in society, in which the student can develop a spirit of research, of critical and innovative ideas, having their professional identities clear as members of multidisciplinary teams.



The current scenario, with 1,803 undergraduate courses in Nutrition in Brazil, of which 1,094 are distance learning courses, is perhaps the most dramatic period in the history of nutrition education in the country.

There are many unanswered questions: are there enough qualified professors to support this increasing number of courses? Do distance learning courses provide adequate training for the professional practice? Will these professionals be able to identify situations of nutritional risk and propose resolute approaches, in an autonomous way, and in a perspective of integral and universal health care?

It is hoped that the data pointed out in this study will contribute to the discussions about the growing privatization of Nutrition education, to the risks to society with the offer of distance learning courses in the field of health, and to the re-evaluation of the role of SUS in training.

## CONTRIBUTORS

J NEVES, CB ZANLOURENSI, SMA DOMENE, B BATISTA and CLA CALADO worked on the research and writing of this article; as well as in the critical review and approval of the version to be published. FAG VASCONCELOS worked on the conception, design, research and writing of the article, on the critical review and approval of the version to be published.

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Received: July 30, 2018

Final Version: February 19, 2019

Approved: March 7, 2019