REVISTA O MUNDO DA SAÚDE

Temporal trend of the insertion of nutritionists in the Unified Health System according to regions of Brazil in the period from 2009 to 2018

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Abstract

The scientific field of nutrition emerged with greater intensity at the beginning of the 20th century and is considered a relatively recent phenomenon. In Brazil, the training of a nutritionist began in the 1940s, when the first generation of medical nutritionists was obtained as well as the creation of the first four courses in the country. Studies on the insertion of nutritionists in the scope of UHS are scarce. Thus, this article aims to assess the temporal trend of the insertion of nutritionists in the Unified Health System from 2009 to 2018. This is an observational, descriptive study, carried out from secondary data provided by BIGS and NRHF. Data analysis made it possible to obtain the quantity and distribution of nutritionists by region/federation unit and year of competence. The data were tabulated using TabWin version 4.15, and the analyses were performed using Microsoft Excel 2016® and Stata 15.0 software. There was a temporal trend towards an increase in the number of nutritionists in the country, with a higher growth rate in the northeast region and a lower one in the southeast region, which registered the highest density of professionals. The northern region had the lowest number of nutritionists. It is believed that the profile observed may be related to the salary offered, specific characteristics, and the intensity of nutrition courses created in each region.

Keywords: Nutritionists. National Food and Nutrition Policy. Nutritional Surveillance. Health Care.

INTRODUCTION

The historical path of the field of nutritional activity is relatively recent with manifestations from the beginning of the 20th century. In Brazil, the training of a nutritionist began in the 1940s, when the first generation of medical nutritionists was obtained and the creation of the first four courses in the country, one in São Paulo and three in Rio de Janeiro[1].

With the foundation of the Brazilian Nutrition Society (1940), the creation of the Brazilian Nutrition Archives (1944), and the foundation of the Brazilian Nutritionists Association (BNA) (1949), it can be said that Nutrition began its institutionalization process in Brazil as a science, public policy area, and professional field[1].

Although the profession was institutionalized in the 1940s, the recognition of the nutrition course as a higher education came to occur with Opinion No. 265, of October 19, 1962, where the then Federal Council of Education (FCE) recognized Nutritionist Courses as

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higher education[1,2].

In parallel to this institutionalization of the field of nutrition in Brazil, the struggle for health has grown significantly, led by the movement for health reform[3]. Thus, after the recognition of the right to health by the Citizen Constitution of 1988, the creation of the Unified Health System (UHS) occurred, in order to guarantee equal health care to individuals through the implementation of actions in the health area, making, therefore, free care mandatory to the entire population[4,5].

As of Law 8.080[5], it is then the duty of the State to guarantee health through the implementation of economic and social policies aimed at reducing the risks of diseases and other illnesses, and by establishing conditions that ensure universal and equal access to actions and services for health promotion, protection, and recovery. To offer health promotion, protection, and recovery actions, the health system is organized at different levels of complexity in order to meet the different demands of the population[6,7].

The presence of the nutritionist in health services contributes in an important way by working directly with individuals, families, and the community, participating in continuing education actions by health professionals; articulating action strategies with the social resources of their territory of operation in favor of promoting healthy eating, the Human Right to Adequate Food, and Food and Nutrition Safety[8]. In addition, this professional has the following specific functions: the evaluation and monitoring the factors of nutrition and health, developing strategies for continuing education in food and nutrition for health professionals, evaluating the results and impact of nutrition and health programs and actions, among others[9].

Several authors have reinforced the extent to which the presence of the nutritionist can support the population's health care actions to strengthen activities, promoting healthy eating practices and nutritional care[10–12]. Thus, the nutritionist, as a health professional, is inserted in all levels of complexity of the health service - from primary care to hospital care - and their performance has contributed to the promotion, protection, treatment, and maintenance of health.

This insertion of the nutritionist professional in the health system contributes to the collective work process in favor of health promotion and is necessary to face the complex nutritional profile presented by the Brazilian population, where malnutrition is expressed by a growing deficit and nutritional deficiencies of micronutrients coexists with an increase in obesity and other chronic non-communicable diseases (CNCD) associated with food[13]. Thus, the presence of the nutritionist can contribute to the qualification of nutritional care actions, helping people in all stages of the life to develop adequate food practices, by assisting individuals and population groups. This contribution of the nutritionist professional is provided for in the Resolution of the Federal Council of Nutritionists (FCN) 600/2018[14] and in the National Food and Nutrition Policy (NFNP)[15]; institutional frameworks that reiterate the importance of this professional in expanding knowledge about food and nutrition and the promotion of healthy eating practices[7,8].

Therefore, considering that the nutritionist represents a professional category with specific and significant technical and scientific contributions to the organization of nutritional care, from primary care to specialized hospital care, which include health promotion and adequate and healthy food, food and nutrition safety, and disease prevention and treatment actions in all stages of life, the objective of this article is to assess the temporal trend of the inclusion of nutritionists in the Unified Health System (UHS) from 2009 to 2018.

METHODS

This was an observational, descriptive study, based on freely accessible, secondary data. The data referring to the total number of nutritionist professionals registered with the Regional Councils of Nutritionists were extracted from the FCN[16] website, and the number of nutritionist professionals linked to a health service - public or private - was obtained from the National Registry of Health Facilities (NRHF). The total number of nutritionists at NRHF was obtained through the selection "Region/State" and "Year/month of competence" and "Higher Education Occupations: Nutritionist", and to obtain data on the number of nutritionists inserted in UHS we added the selection "Attends UHS: Yes"[17]. The size of the annual population was obtained on the website of the Brazilian Institute of Geography and Statistics (BIGS)[18].

The steps of this study consisted of an initial search for the number of nutritionists in Brazil by region in the FCN database, which is disseminated through quarterly reports. The number of nutritionists for each year of analysis registered with the FCN was obtained using the average of the four quarters of each year. Likewise, as the NRHF database is monthly, data for the 12 months of each year were extracted and the annual average was used to analyze the number of nutritionists linked to a health service in that year. First, the quantity of nutritionists in all health establishments was extracted and later only the establishments that attend in UHS were selected. Finally, population data were obtained from the BIGS website - 2010 census and annual estimate for other years - and the distribution of nutritionists was calculated.

The total number of nutritionists was analyzed, the number of nutritionists in the public and private sector for every 100 thousand inhabitants each year, and the temporal trend in the distribution of these professionals in the sectors they serve in UHS according to the Region of Brazil. The analysis of the rate of nutritionists per 100 thousand inhabitants was carried out to allow comparability between the regions of the country.

The temporal trend analysis was performed, using the Prais-Winsten generalized linear regression procedures, which considers the serial autocorrelation. For this, the annual percentage change (APC) and their respective 95% confidence intervals (95% CI) were estimated. The p values were obtained by a t test with a 5% level of statistical significance. For tabulation, descriptive analysis, and calculation of rates, Microsoft Office Excel 2016 software was used, and for trend analysis, Stata 15.0 software was used.

As only publicly available data were used and without identifying the subjects, submission to the Research Ethics Committee (CEP) was waived.

RESULTS

In 2009, according to the active enrollment data in the FCN, there were an average of 14,502 nutritionists in Brazil and in 2018 that number was 30,226, which represents a growth of 2.1 times. Table 1 shows the data related to the number of nutritionists by region of Brazil in the period 2009 to 2018. In establishments attending the UHS, this number was 9,864 in 2009, rising to 21,385 in 2018.

In 2018, the largest concentration of professionals was in the Southeast (16,269), followed by the South (7,224), Northeast

(3,217), Midwest (2,638), and North (877). The northern region presented a quantity 18.5 times smaller than that of the Southeast region. The Northeast and Midwest regions were the regions with the highest increase in nutritionists, registered at 3.5 and 2.3, respectively.

Table 2 shows the total number of nutritionists per 100 thousand inhabitants in the period from 2009 to 2018 registered with the FCN, according to regions of Brazil. The number of registered nutritionists in the period evaluated varied from 8 to 14. It is noted that the Southern and Southeast regions had the highest number of nutritionists per 100 thousand inhabitants, while in the Northern region there was the lowest number of registered professionals in the FCN.

The Northeast and Midwest regions showed the highest growth in professionals in the analyzed period, 3.27 and 2.00 respectively (table 2).

Table 3 refers to the number of nutritionists registered with NRHF per 100 thousand inhabitants. Professional nutritionists registered with NRHF are those who work in public or private establishments in the health area. The Southern region has more professionals registered with NRHF per 100 thousand inhabitants (16.07), and the North had the smallest (8.65). Over the period analyzed, the number of registered nutritionists in the NRHF ranged from 6.31 to 13.85 per 100 thousand inhabitants in Brazil.

As for the increase in the regions, it was observed that the Northeast region had the largest increase in registered nutritionists (2.54 times), and the Southeast region the one with the lowest increase (2.04 times).

In relation to nutritionists registered in services that attend the UHS in the NRHF per 100 thousand inhabitants, graph 1 shows the evolution over the period analyzed and table 4 shows that there was a variation from 5.15 to 10.26 professionals between regions of Brazil. In 2009, the Northern and Northeastern regions had the lowest number of nutritionists in establishments that attend the UHS per 100 thousand inhabitants. In 2018, the Northeast region concentrated the largest number of professional nutritionists in the UHS per 100 thousand inhabitants (11.83), and this region has the highest increase (2.4); followed by the Southern region (11.15) with an increase of 2.0 and the Northern region with the lowest number of professionals (7.53) increasing 2.1 times. The analysis of the temporal trend shows that there was an increase in the insertion of nutritionists in the UHS in all regions of Brazil with a higher annual percentage variation in the Northeast region (8.90), followed by the Midwest region (7.62), and lower in the Southeast region (5.35).

Table 1 – Average number of nutritionists registered with the Federal Council of Nutritionists by region of the country in the period from 2009 to 2018.

Region	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Increase
Northern Region	501	586	714	849	992	1106	637	740	824	877	1.8
Northeast Region	929	1089	1261	1446	1667	1914	2229	2538	2923	3217	3.5
Southeast Region	8224	9282	10245	11208	11874	12722	13587	14380	15142	16269	2.0
Southern Region	3710	4139	4601	4930	5408	5772	5997	6424	6808	7224	1.9
Midwest Region	1139	1316	1491	1686	1834	2013	2183	2326	2459	2638	2.3
Total/Brazil	14502	16411	18313	20118	21775	23527	24633	26407	28156	30226	2.1

Source: Federal Council of Nutritionists, 2020.

Table 2 – Rate of nutritionists registered with the Federal Council of Nutritionists per 100 thousand inhabitants, according to the region of the country in the period from 2009 to 2018.

Region	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Aumento
Northern Region	3.26	3.60	4.44	5.21	5.84	6.42	3.64	4.18	4.59	4.82	1.48
Northeast Region	1.73	2.01	2.36	2.68	2.99	3.41	3.94	4.46	5.10	5.67	3.27
Southeast Region	10.16	11.30	12.65	13.74	14.06	14.95	15.85	16.65	17.42	18.55	1.82
Southern Region	13.38	14.82	16.69	17.79	18.78	19.89	20.52	21.82	22.96	24.28	1.81
Midwest Region	8.20	9.17	10.47	11.69	12.23	13.23	14.14	14.85	15.49	16.40	2.00
Total/Brazil	7.57	8.42	9.52	10.38	10.83	11.60	12.05	12.81	13.56	14.50	1.91

Source: Federal Council of Nutritionists, 2020.

Table 3 – Rate of registered nutritionists in the NRHF per 100 thousand inhabitants, according to the according to the region of country from 2009 to 2018.

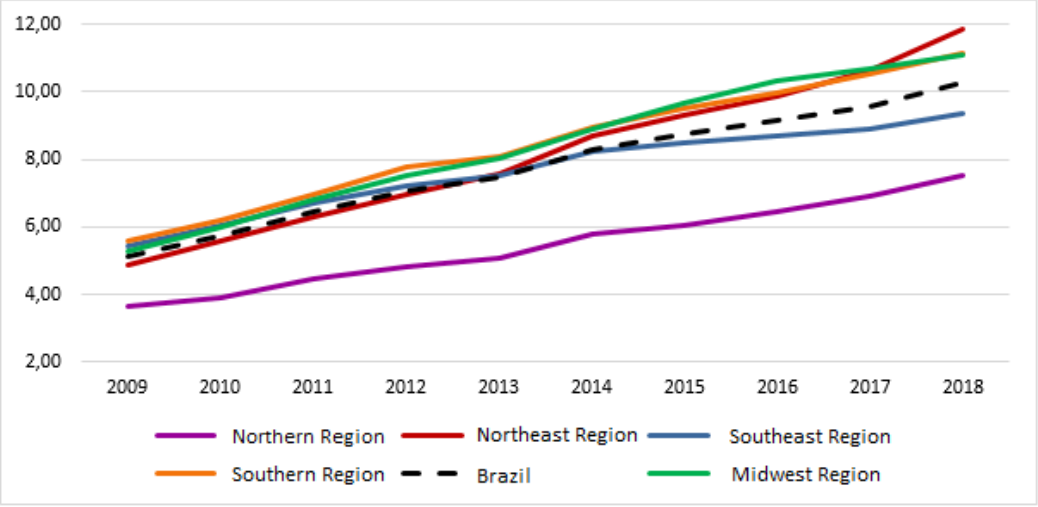
Region	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Aumento
Northern region	4.06	4.40	4.97	5.41	5.81	6.54	6.89	7.41	8.01	8.65	2.13
Northeast Region	5.36	6.14	6.95	7.74	8.43	9.65	10.35	11.18	12.15	13.60	2.54
Southeast region	6.92	7.78	8.78	9.56	10.12	11.24	11.84	12.52	13.22	14.12	2.04
Southern region	7.40	8.36	9.54	10.69	11.22	12.40	13.26	14.14	15.09	16.07	2.17
Midwest region	6.76	7.86	9.12	10.06	10.73	11.79	12.73	13.68	13.93	15.00	2.22
Total/Brazil	6.31	7.13	8.09	8.90	9.49	10.61	11.28	12.03	12.79	13.85	2.19

Source: National Register of Health Facilities, 2020.

Table 4 – Time trend of the rate of registered nutritionists in the NRHF in services that attend the UHS per 100 thousand inhabitants, according to the region of the country in the period from 2009 to 2018.

Region	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	APC	IC 95%	p-value	Trend
North	3.65	3.92	4.44	4.82	5.10	5.79	6.05	6.45	6.93	7.53	6.93	6.46-7.40	< 0.001	Growing
Northeast	4.88	5.57	6.28	6.97	7.56	8.68	9.29	9.88	10.64	11.83	8.90	8.02-9.78	< 0.001	Growing
Southeast	5.44	6.05	6.72	7.20	7.54	8.25	8.49	8.71	8.89	9.34	5.35	3.78-6.93	< 0.001	Growing
South	5.61	6.21	6.95	7.79	8.07	8.97	9.53	9.99	10.54	11.15	6.96	5.78-8.16	< 0.001	Growing
Midwest	5.26	6.00	6.82	7.51	8.02	8.88	9.65	10.32	10.71	11.11	7.62	5.92-9.34	< 0.001	Growing
Brazil	5.15	5.76	6.45	7.04	7.45	8.31	8.74	9.14	9.58	10.26	6.88	5.68-8.09	< 0.001	Growing

Source: National Register of Health Facilities, 2020.



Source: Prepared by the authors, based on data from the National Register of Health Facilities and BIGS, 2020.

Figure 1 – Evolution of the rate of registered nutritionists in the NRHF in services that attend the UHS per 100,000 inhabitants, according to the region of country from 2009 to 2018.

DISCUSSION

The field of nutrition can be considered new and therefore faces many challenges. Such challenges can be perceived in the complex process of training professional nutritionists, which involve conceptual aspects, as well as institutional relationships for addressing knowledge and crystallized and hegemonic values[19].

The data show that in 2009 there were only 14,502 nutritionists in the country, a figure that, in 2018, increased to 30,226 professionals. Despite the notable difference between the regions, with the Southeastern region having the largest number of nutritionists in Brazil,

the regions with the highest growth recorded were the Northeast (3.5 times) and the Midwest (2.3 times), and the lowest was found in the Northern region (1.8 times). The study by Haddad et al., also identifies that in the analysis of undergraduate courses in nutrition, between 2006 and 2008, the Northeast was the region that had the highest number of graduates per inhabitants when compared to the other regions[20].

These data corroborate the results of Neves *et al.*[21], and also with the findings of the Workstation of the Observatory Network of Human Resources in Health of the Social Medicine Institute of the University of the State of Rio de Janeiro[22], which in carried out its research in the period from 2000 to 2010 and observed a greater percentage of variation in the number of higher education courses in nutrition in the Northeast (757%), while the Midwest region had an increase of 267%, the Southeast of 223%, and the South of 146%. Although the northern region has the lowest rates of nutritionists compared to other regions, the percentage of variation was 700%. This fact may be related to the number of nutrition courses opened in the regions since the implementation of the nutrition profession in Brazil until today.

In the Northern region, there is a difference of 26 years between the opening of the first and second nutrition courses (the first created in 1973 and the second in 1999)[23]. In the Midwest region, the first course was created in 1975, in 1996 there were 4 courses, and in 2009 there were 30 courses. In the Northeast region, between 1976 and 1986, another six courses were created in the states of Paraíba (1976), Piauí (1976), Rio Grande do Norte (1976), Ceará (1977), Alagoas (1978), and Bahia (1986), so that up to 1996 there were 8 courses, and in 2009, 58 courses are found in all states in the region[23]. In the Southeast, up to 1996, there were 23 courses, and in 2009, 221 courses[23].

Another possible explanation for the growing number of nutrition courses in the Northeast is that it has the highest salary. In Sergipe, the nutritionist's base salary is R$ 5,162.85 (referring to 5.4 minimum wages), which is the highest nutritionist salary in Brazil. While the state of Espírito Santo (Southeastern region) has the lowest base salary at R$ 2,400.00 (2.5 minimum wages)[24].

The explanation for the growing trend in the number of nutrition courses in Brazil may also be related to a freedom to open undergraduate courses, since there were only 45 nutrition courses until the year 1996, and after the enactment of the National Education Law of Guidelines and Bases[25], which boosted private education, the increase in courses is evident. In Brazil, between 1996 and January 2000, there were 106 nutrition courses, in August 2009 the number of courses was 39123, in 2018 there were 609 courses[26], and in 2020 the number of courses exceeded 800[27].

Pinheiro *et al.*[28] carried out a study that shows that public health is recognized by students as one of the main areas of interest in the education of nutritionists. However, in 2008, a study with the participation of 587 professionals from the five regions of Brazil inferred that only 10.2% of these work in this area[29]. When studying the professional profile of nutritionists who graduated from a university in São Paulo, Gambardella *et al.*[30] observed that 36.6% worked in Clinical Nutrition, 31.0% in food and nutrition units, and 7.0% in Public Health. In a study conducted with recent graduates from a university in São Paulo, Miranda et al.31 found that 56.6% worked in the area of Clinical Nutrition and 53.8% in the area of Collective Food; of these, 7.2% worked in the Public Health area. More recent data from FCN (2019) show that 17.7% of nutritionists work in the area of public health[26].

As noted, the number of registered nutritionists in services that attend the UHS in the NRHF in 2018 was 21,385 (16.15%). Moreover,

considering that among the establishments that attend the UHS may be those where nutritionists work specifically with clinical nutrition, it is concluded that it is likely that the number of professionals working exclusively in public health may be even smaller. It is also necessary to highlight the importance of the professional nutritionist in the management of public health policies and programs as defined by Resolution FCN 600/2018[14]; an important area of public health. Although this resolution does not determine the minimum number of nutritionists to meet public health demands, it advises the need for 01 (one) nutritionist per program[14], which is difficult to measure through the data presented by NRHF as it is not possible to know which and how many active programs exist in the municipal domain.

The analysis based on the size of the population identifies that in 2009 there were 7.57 nutritionists/100,000 inhabitants and in 2018 14.50 nutritionists/100,000 inhabitants. Considering the importance of this professional discussed by other authors, it can be considered that this number is still below the number of professionals needed in the health care network, especially in primary care[10,32], which is an important place for the nutritionist to work in collective health.

With the creation of the Family Health Support Center teams (FHSCt)[33] there was an increase in the number of nutritionists working in the basic health network; however, this reduced number can be understood by the fact that the insertion of this professional depends on the decision of the city manager in terms of opening of a public position or selection process to meet this demand. For managers to decide on their inclusion, in addition to considering the need for the professional, it would also be necessary to assess the feasibility and organize the spending priorities established for the city's health area.

However, despite the still insufficient number of professionals, the presence of the nutritionist in primary care is justified by the need for nutritional care actions in a qualified manner, as described in the National Food and Nutrition Policy (NFNP)[34]. Promoting nutritional actions within the collective health approach consists of a strategic way of promoting health and preventing diseases associated with inadequate nutrition, considering that the complications resulting from these cases may produce a greater demand in medium and high complexity health services as well as causing increased public spending to be treated. With this, the presence of a trained professional in the area of nutrition is essential to address and socialize knowledge about access to and consumption of healthier foods in an interdisciplinary manner and with the support of appropriate public policies to promote the implementation of actions that provide food and nutritional safety to the population[35].

This study provides a fundamental analysis of the trend and evolution of the number of nutritionists in the health area and their distribution in the regions of the country, which contributes to health management by reflecting on the implementation of incentives and support strategies in the areas that need this professional most. Limitations of this study refer to the use of secondary databases, based on data reported by the managers responsible for health establishments, which, depending on factors outside the presence of the professional, can be sent to the federal database with delays. In addition, the analysis of the rate of nutritionists in establishments that attend the UHS does not allow details of their insertion (in management or assistance), since many nutritionists allocate part of their workload to the management of programs and health care, mainly in municipalities of smaller population size.

CONCLUSION

Given the above, it is concluded that the number of nutritionists in the country in the health area, especially in UHS, has been growing at an accelerated rate. However, it is important to emphasize that this quantity is still very uneven and insufficient for the existing demands when analyzing the distribution of the professional in proportion to the size of the population and the prevalence of health problems related to food and nutritional issues. It is necessary to recognize and publicize the contribution of the nutritionist in promoting the health of the population and in encouraging healthy lifestyles so that public managers may make greater efforts to enable the integration of these professionals in health teams as well as in the city, state, and federal management area of food and nutrition.

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