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Public spending on outpatient speech therapy services in Brazil between 2009 and 2018: DATASUS databases

Gastos públicos em serviços ambulatoriais de Fonoaudiologia no Brasil entre 2009 e 2018: bases de dados do DATASUS

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ABSTRACT

Purpose: To analyze public spending on health services to outpatient services in Speech Therapy in the five federative regions of Brazil. **Methods**: This is an ecological study carried out through the search for secondary data available on a public domain virtual platform, DATASUS. The collected data refer to the values approved for the Speech Therapy procedures in the period from 2009 to 2018 in the five federative regions. Descriptive analysis of data and exposure of results in absolute and relative values and growth rates were adopted. **Results**: It was found that the average investment in reais, per year, in speech therapy services in Brazil was approximately R$ 223,952,639,232.00, with 47.2% of the resources destined for the Southeast region. Among the major areas of specialization, Audiology accounted for 95.4% of the investment, followed by Language (4.0%), Orofacial Motricity (0.5%) and Voice (0.1%). **Conclusion:**The findings indicate that speech therapy services demand a considerable portion of public resources, with the area of Audiology being responsible for almost half of these expenses, followed by the large area of Language, Orofacial Motricity and Voice.

Keywords: Unified Health System; Speech Therapy; Health Services Research; Quality of Health Care; Delivery of Health Care

RESUMO

Objetivo: Analisar os gastos públicos em saúde destinados aos serviços ambulatoriais em Fonoaudiologia nas cinco Regiões Federativas do Brasil. **Métodos:** Trata-se de um estudo ecológico realizado por meio da busca de dados secundários disponíveis em uma plataforma virtual de domínio público, DATASUS (Departamento de Informática do Sistema Único de Saúde). Os dados coletados referiram-se aos valores aprovados para os procedimentos da Fonoaudiologia no período de 2009 a 2018 nas cinco Regiões Federativas. Adotou-se análise descritiva dos dados e exposição dos resultados em valores absolutos, relativos e taxas de crescimento. **Resultados:** Verificou-se que o investimento médio em reais (R$), por ano, nos serviços de Fonoaudiologia no Brasil foi de, aproximadamente, R$ 223.952.639.232,00, sendo 47,2% dos recursos destinados à Região Sudeste. Dentre as grandes áreas de especialização, a Audiologia foi responsável por 95,4% do investimento, seguida pelas áreas da Linguagem (4,0%), Motricidade Orofacial (0,5%) e Voz (0,1%). **Conclusão:** Os serviços fonoaudiológicos demandam considerável parcela dos recursos públicos, sendo a área da Audiologia responsável por quase metade desses gastos, seguida pelas grandes áreas da Linguagem, Motricidade Orofacial e Voz.

Palavras-chave: Sistema Único de Saúde; Fonoaudiologia; Pesquisa sobre Serviços de Saúde; Qualidade da Assistência à Saúde; Assistência à Saúde

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INTRODUCTION

In the recent years, speech-language therapy services in the Unified Health System (*Sistema Único de Saúde* - SUS) have been increasingly required to provide a quality service, following the public health precepts. As a result, many concepts, and practices in speech-language therapy were reassessed[1]. However, there is still a lot to be done so that the basic principles of the SUS are fully achieved, given that the increased demand for speech-language therapy services has been aligned with the need for increased investments and costs with the use of public resources. From this perspective, the implementation of a systematic tool for the assessment and control of public health services favors the improvement of resource management and the quality of services[2].

Thus, the discussion regarding investment in health services should occur not only based on the number of resources given to the sector but on the search for techniques and instruments that are efficient and effective and contribute to the population's access to a public health system and quality, safe and cost-effective to achieve the basic principles and guidelines of the SUS[3].

There are also few studies in speech-language pathology based on information systems. Few studies analyze public spending on speech-language therapy procedures, or analyze auditing techniques. That, added to the lack of protocols specific audits in the area of speech-language therapy in the National Audit System (*Sistema Nacional de Auditoria* - SNA) to systematize the practice, as in a solid way in other areas of health, compromise the quality of care for these services offered by the SUS network.

Thus, this study aimed to analyze the public spending on health to outpatient services in speech-language therapy in Brazil, showing the importance of strengthening the practice of auditing in health in these services by speech-language pathologists.

METHODS

This is an ecological study with a quantitative approach, carried out by searching secondary data available on a virtual platform in the public domain, extracted from the database of the Outpatient Information System of the Unified Health System (*Sistema de Informação Ambulatorial* - SIA/SUS), linked to the Ministry of Health, provided by the Information Technology Department of the Unified Health System (DATASUS), through the TABNET application (http://www.datasus.gov.br).

The inclusion criteria comprised all procedures of the four major areas of speech-language therapy (Audiology, Language, Orofacial Motricity, and Voice) and financial data at the national level between 2009 and 2018 for speech-language therapy services under the SUS, intended rehabilitation (providing hearing aids), diagnosis and therapy. The flowchart illustrated in Figure 1 shows the steps of data collection in the DATASUS information systems.

The codes of procedures referring to cochlear implants, semi-implantable prostheses and/or bone-anchored prostheses, ear prostheses, generic therapeutic approaches that hinder to distinguish the area of specialization to which they refer were not part of this study (Ex.: 0301070113 and 0301040044), as well as the complementary procedures aimed at speech-language

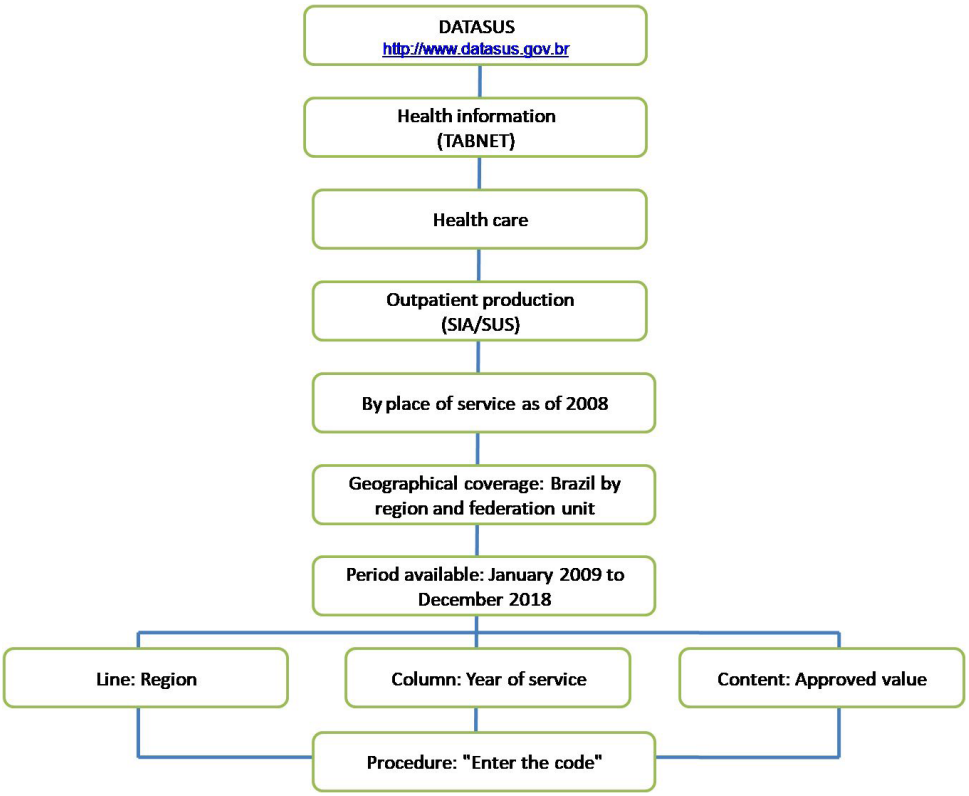

Figure 1. Flowchart of data collection steps on the DATASUS digital platform

therapy since such methods are not exclusive to speech-language therapy, with the resources for other areas.

Chart 1 lists the codes of procedures for the four major areas of speech-language therapy registered in the SIA/SUS. So far, there are no registered procedures specific to rehabilitation for the areas of Voice and Orofacial Motricity in the SIA/SUS. The Orofacial Motricity is referenced by a generic registration code for the assessment procedure.

The database was assembled using the computer program Microsoft Excel, version 2010, Windows 10 operating system. The statistical resources adopted for data exposure were descriptive statistics, by measuring the growth rate, relative and absolute frequency. The method used to calculate the annual growth rate was through the difference between the previous and the subsequent year, adopting the year 2009 as the zero mark.

Due to the character of analysis of secondary data of the study, available in a public domain platform, it was not submitted and registered in the CEP/CONEP system, according to the Resolution of the National Health Council number 510/2016. However, all ethical principles involved in data analysis were carefully respected.

RESULTS

Through the analysis of data of the values approved for outpatient procedures, Table 1 shows the movement of public resources for the financing of assistance with speech-language therapy, between 2009 and 2018, in the Brazilian Regions, highlighting the four major areas and the gross amounts (in Brazilian reais) approved.

The investment in the ten years analyzed (2009-2018) totaled an amount of expenditure of R$ 2,239,526,392.32 throughout Brazil. The average investment per year was R$ 223,952,639.232, with 47.2% of this amount corresponding exclusively to resources for the Southeast Region and 5.7% for the North Region (Figure 2).

The Audiology area was responsible for an important portion (95.4%) of the investments directed to services in speech-language therapy in the same period (Table 1). In other areas focused on speech-language therapy, the largest portion of investments was in the area of Language (4.0%), followed by the areas of Orofacial Motricity (0.5%) and Voice (0.1%).

We also observed that the Language area was responsible for the largest investments among speech-language therapy procedures in all Federative Regions, with the Southeast (5.1%) and Northeast (4.3%) regions that had the largest share of resources for these sectors, followed by the Midwest (2.9%), North (2.1%) and South (1.6%) regions.

To better expose the aforementioned data, Table 2 divides the area of Audiology into auditory rehabilitation and audiological assessment/diagnosis and details the expenses. The growth rate in the Audiology area evidenced a gradual increase in the costs of audiological procedures, showing growth in the first years, with a subsequent drop from 2011 and maintenance of investments, with lower growth, for the other years. We also noted that the auditory rehabilitation segment was responsible for more than half

Chart 1. List of codes of procedures in speech-language therapy registered in the Outpatient Information System of the Unified Health System included in this study

Areas	Procedure	Procedure codes
Audiology	Assessment/Diagnosis	0211070025, 0211070033, 0211070041, 0211070122, 0211070203, 0211070211, 0211070238, 0211070262, 0211070289, 0211070327, 0211070335, 0211070343, 0211070050, 0211070360, 0211050113, 0211070149, 0211070157, 0211070270, 0211070351, 0211070092, 0211070106, 0211070297, 0211070300.
	Rehabilitation	0211070319, 0211070246, 0301070032,0701030011, 0701030020, 0701030038, 0701030046, 0701030054, 0701030062, 0701030070, 0701030089, 0701030097, 0701030100, 0701030119, 0701030127, 0701030135, 0701030143, 0701030151, 0701030160, 0701030178, 0701030186, 0701030194, 0701030208, 0701030216, 0701030224, 0701030232, 0701030240, 0701030259, 0701030267, 0701030275, 0701030283, 0701030291, 0701030305.
Language	Assessment	0211070068, 0211070076.
	Rehabilitation	0301070024.
Voice	Assessment	0211070017, 0211070114.
Orofacial motricity	Assessment	0211070084.

Source: DATASUS – *Sistema de Informação Ambulatorial do Sistema Único de Saúde* – SIA/SUS (2009 to 2018)

Table 1. Amounts approved in Brazilian reais, intended for speech-language therapy services in the different regions of the Brazilian Federation, in the four major service areas (2009 to 2018)

Federation regions	Values approved by specialization area of speech-language therapy (R$)				Total
	Orofacial motricity	Language	Voice	Audiology	
Northeast	3,315,610.98	22,121,627.87	533,340.00	487,031,214.36	513,001,793.21
North	1,109,498.61	2,636,851.32	134,851.00	123,731,167.20	127,612,368.13
Southeast	4,733,326.71	53,583,270.57	738,137.00	997,417,346.14	1,056,472,080.42
South	1,310,746.13	5,930,350.28	119,078.00	355,705,880.11	363,066,054.52
Midwest	1,490,797.01	5,164,936.52	188,773.00	172,529,055.21	179,373,561.74
Brazil	11,959,979.44	89,437,570.86	1,714,179.00	2,136,414,663.02	2,239,526,392.32

Source: DATASUS – *Sistema de Informação Ambulatorial do Sistema Único de Saúde* – SIA/SUS (2009 to 2018)
Subtitle: R$ = Brazilian reais

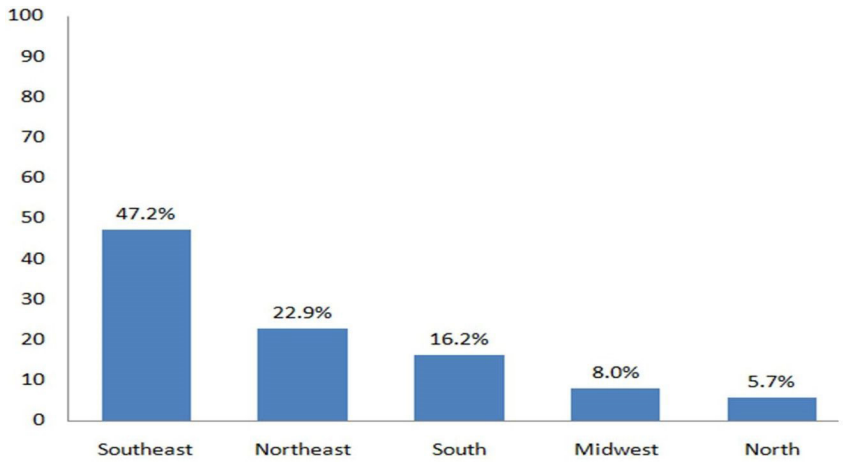

Figure 2. Distribution of outpatient costs in speech-language therapy, by Federative Region of Brazil, between 2009 and 2018. Source: DATASUS – *Sistema de Informação Ambulatorial do Sistema Único de Saúde* – SIA/SUS

Table 2. Distribution of approved amounts for Audiology care and respective annual growth rates between 2009 and 2018

Period	Resources for Audiology services (R$)					Tx Annual growth (%)
	Rehabilitation auditory*	%	Assessment/Diagnosis audiological	%	Total	
2009	80,314,914.18	49.4	82,207,614.14	50.6	162,522,528.32	0
2010	93,510,971.73	50.6	91,245,041.90	49.4	184,756,013.63	12.0
2011	103,623,149.46	51.0	99,945,153.05	49.0	203,568,302.51	9.2
2012	107,213,073.30	51.2	102,180,496.89	49.8	209,393,570.19	2.8
2013	112,172,737.84	51.9	103,980,354.96	49.1	216,153,092.80	3.1
2014	119,217,864.26	52.7	106,900,204.45	47.3	226,118,068.71	4.4
2015	116,919,690.50	51.8	108,632,901.57	48.2	225,552,592.07	-0.3
2016	124,479,846.50	52.9	110,679,942.02	47.1	235,159,788.52	4.1
2017	119,481,348.28	51.4	112,897,124.46	48.6	232,378,472.74	-1.2
2018	124,713,655.64	51.8	116,094,677.89	48.2	240,808,333.53	3.5

Source: Datasus – *Sistema de Informação Ambulatorial do Sistema Unico de Saúde* – SIA/SUS (2009 to 2018)
*Concession, adaptation, and evaluation of hearing aids for sound amplification
Subtitle: R$ = Brazilian reais; Tx = Tate; % = Percentage

Table 3. Distribution of amounts approved and intended for assistance in Orofacial Motricity, Voice, and Language between 2009 and 2018

Period	Investment in speech-language therapy services (R$)						Total	Tx Annual growth (%)
	OM	%	Voice	%	Lgg	%		
2009	1,144,292.50	13.4	178,474.00	2.1	7,190,551.72	84.5	8,513,318.22	0
2010	1,210,748.46	13.1	186,762.00	2.0	7,841,574.38	84.9	9,239,084.84	7.9
2011	1,150,097.19	12.6	197,687.00	2.2	7,758,905.62	85.2	9,106,689.81	-1.5
2012	1,079,955.93	11.3	177,358.00	1.9	8,290,061.19	86.8	9,547,375.12	4.6
2013	1,097,752.23	10.8	187,778.00	1.9	8,844,040.49	87.3	10,129,570.72	5.7
2014	1,079,105.16	9.9	177,894.00	1.6	9,655,973.50	88.5	10,912,972.66	7.2
2015	1,187,263.92	11.6	170,248.00	1.7	8,918,473.48	86.8	10,275,985.40	-6.2
2016	1,279,595.07	11.9	156,324.00	1.5	9,252,231.26	86.6	10,688,150.33	3.8
2017	1,300,079.31	11.7	142,781.00	1.3	9,628,042.32	87.0	11,070,902.63	3.5
2018	1,431,089.67	10.5	138,873.00	1.0	12,057,716.90	88.5	13,627,679.57	18.8

Source: DATASUS – *Sistema de Informação Ambulatorial do Sistema Único de Saúde* – SIA/SUS (2009 to 2018)
Subtitle: OM = Orofacial Motricity; Lgg = Language; Tx = Rate; R$ = Brazilian reais; % = Percentage

of the investments in the Audiology area, with well-established percentages of resource distribution over the years.

Also, when analyzing the values approved for speech-language therapy assistance between 2009 and 2018, we observed that the areas of Orofacial Motricity and Voice had decreased in their growth rates over the years. The Voice area had lower investments when compared to other areas of specialization. In the area of Language, the values remained practically stable and with small increases over the years (Table 3).

There was a slight decrease in the growth rate of values approved from 2010of the annual growth rate of speech-language therapy assistance, with a significant increase in the last year, 2018.

DISCUSSION

We observed that the average annual public expenditure on speech-language therapy was approximately R$ 223,952,639.232, distributed in assistance in various specialties. The aforementioned value may be underreported and outdated and, eventually, higher than in this study.

These findings show that speech-language therapy is responsible for a significant portion of expenditure on outpatient procedures, both on average and in high complexity, in all regions of the Federation, with growth indicators in care and costs over the years, directly related to the demand for outpatient production and new public health policies.

These procedures have been implemented over the last few years and have been guaranteed through programs and laws such as the National Policy for Hearing Health Care (GM/MS 2073/04)[4], OAE Test (Federal Law nº 12.303/ 2010)[5] , Ordinance No. 793/2012, which institutes the Care Network for Persons with Disabilities within the Scope of SUS[6], Protocol for Assessment of Tongue Frenulum in Babies (Law No. 13.002/2014)[7] , currently systematized in Consolidation Ordinance 3/GM/MS/2017, which consolidates the rules on the Care Network for People with Disabilities in the Unified Health System [8], among other policies that provide for the participation of speech-language therapists in the teams of different health care services.

In this sense, speech-language therapy services in the SUS have been growing over the years[1]. In Brazil, there are currently 22,398 (twenty-two thousand, three hundred and ninety-eight) speech-language therapy services registered in the National Register of Health Establishments (*Cadastro Nacional de Estabelecimentos de Saúde* - CNES)[9] and millions of patients in outpatient treatment in speech-language therapy, annually. Speech-language therapy is an area of professional activity that, over the years, has shown its role in health actions within the scope of the SUS, from primary care to high-complexity levels[10].

Aspects of hearing, language, speech, and voice, objects of study in speech-language therapy, are considered attributes of global health. Changes in these systems have the potential to affect not only verbal and non-verbal communicative skills, but also to generate limitations in the ability to individual explore the world, causing impacts on personal and social experience[11]. Thus, speech-language therapy has demonstrated its importance in health services, proving to be increasingly necessary for the context of multidisciplinary teams at all levels of complexity.

According to the findings of this study, we observed the presence of asymmetry in the distribution of amounts related to spending on speech-language therapy services among the different Federative Regions. The Southeast Region retained the largest portion of public resources, followed by the Northeast Region. The lowest amount of costs for the same services was in the North Region.

In Brazil, according to the latest Census of the Brazilian Institute of Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística* - IBGE) for 2010[12], the Southeast and Northeast regions showed a greater number of inhabitants per square meters. This could partially justify the high investments due to demand[13] and a greater quantity of speech-language therapy services registered with the CNES and of speech-language pathologists in the region. The North Region, on the other hand, had the lowest number of inhabitants per square meter.

This modality of distribution of health services in speech-language therapy may reflect the standardization established by previous health programs, especially hearing health. It represents the largest portion of expenses and for many years followed the parameters of Ordinance SAS/MS 587/04. This ordinance recommends the quantity of one hearing health service for each state with a population of fewer than 1.5 million inhabitants and two services for states with a population between 2 and 3 million inhabitants[14].

In this ecological study, we saw that the services for audiological assistance were responsible for the largest portion of investments in speech-language therapy in all Federative Regions when compared to speech therapy services, in which the areas of Orofacial Motricity and Voice, respectively, had the lowest costs.

This disproportionate distribution between the different types of speech-language therapy is related to the fact that the Audiology area includes a portfolio of high-cost services and procedures. In addition to behavioral, electroacoustic, and electrophysiological assessments, it has auditory rehabilitation through grants of individual sound amplification devices (ISAD) of different technologies and therapeutic procedures aimed at different pathologies of the auditory and vestibular system, which are distributed in all levels of health complexity.

Audiology, for many years, had its services and procedures ensured by the National Policy for Hearing Health Care (*Política Nacional de Atenção à Saúde Auditiva* - PNASA), which guaranteed hearing diagnosis and rehabilitation in the specialized health networks of the SUS. We also noted a variety of procedures aimed at hearing health with active registration in the SIA/SUS database, which does not occur in areas intended for therapy, a situation that may contribute, in part, to this discrepancy.

However, few procedures related to therapeutic assistance are registered in the DATASUS database, especially those in the areas of Orofacial Motricity and Voice. Many of them have a general definition, often insufficient to characterize specific procedures in the area. However, although the records in the SIA/SUS are a socioeconomic and financial thermometer, they may also contain incorrect records in this public domain platform, which would justify the underreporting and the low values applied to these procedures. In this sense, we highlight the importance of creating new codes for each area and specific for each procedure.

We also observed that the growth rates had a decrease in 2011, a decrease compatible with the period in which public policies on hearing health underwent a reformulation, leading to the end of PNASA, which ranged from promotion actions from hearing health to speech-language therapy, in all life cycles[15].

Although the data indicate that speech-language therapy procedures consume a significant portion of public resources, the area of audiological care needs more attention in terms of specificity in the audit. They are audited by other health professionals without the domains of technical knowledge for specific procedures in the area, which compromises the quality of auditing in speech-language therapy and, therefore, in the health care provided to SUS patients.

The health audit is a way to ensure the patient's access to outpatient services in speech-language therapy effectively and consciously, providing an organized, less costly, effective, and quality growth in health systems.

Also, the National Audit System (*Sistema Nacional de Auditoria* - SNA) does not have specific protocols that can systematize the auditing activity in speech-language therapy, as in a well-established manner in Medicine, Nursing, and Dentistry, areas that have protocols specifics with the SNA. This situation may explain the fragility of auditing in health services, especially in speech-language therapy, a fact that is at odds with the recommendations of the SNA, which defends that the exercise of auditing in the SUS should be developed by a multidisciplinary team to increase the efficiency and resolvability of the function through the integration of professionals involved in the most varied services integrated to the system's routine[16].

Reports in the literature demonstrate difficulties of health auditors to audit services that do not constitute their area of knowledge since the exercise of auditing in services other than the primary training area of the auditor requires a lot of the specific technical knowledge of that service being audited, in addition to the experience of the auditors on the procedures, operation of services and equipment. It is not rare in studies that auditors report that there is a lack of other professionals in the teams[17].

Thus, as an efficient quality tool that improves a management system, auditing is essential in the regimental structure of private and public services. When properly applied, it will diagnose non-conformities in the evaluated system and determine a way to add improvements to ongoing public policies, based on the optimization of resources for quality care[18].

The insertion of systematic assessment and control, as a form of organization in health services, is seen as a valid resource, both for patients, professionals, and managers, also providing information that contributes to the focus on observing programs, services, or technologies[19,20].

Therefore, the data from this study lead to the reflection that it is important and urgent to have a rigorous and more specific control of public resources for speech-language therapy services, exercised by a professional of this category to verify, in a way, more judicious, the factors that act on this demand and the management strategies that can enable greater quality in the provision of this service to the population, as regulated by the Federal Council of speech-language therapy, which created Resolution CFFa 455, of October 30, 2014 [21].

Given this reality, added to the significant scarcity of publications on this topic in speech-language therapy, this study struggled with several limitations to prove the data presented more strongly. Such data may have been poorly represented due to underreporting on the SIA/SUS platform, which compromised the actual analysis of the values since some procedures were incomplete, lacking registration of some regions and non-consistent registered values with the procedures. However, the records on the SIA/SUS platform cannot be devalued, as they demonstrate the number of procedures that speech-language therapy has performed in health care, especially within the SUS.

In this sense, the Federal Council of speech-language therapy and the Regional Councils should discuss and rethink the importance of this practice, seeking to articulate with health managers the creation of specific protocols in auditing in speech-language therapy and analyzing the need of the creation of a new area of speech-language therapy specialization focused on health auditing. Thus, the speech-language therapists can learn about this new area, specialize, and help in optimizing resources, minimizing waste, and generating greater quality in the provision of services for patients.

CONCLUSION

Public spending on health assistance services in speech-language therapy presents a considerable amount. The assistance area of Audiology is responsible for more than 90% of investments in public services. These expenses are unevenly distributed among the different regions of Brazil, considering that almost half of this amount corresponds to the Southeast Region and a small portion to the North Region.

The importance of auditing speech-language therapy services by professionals with specific technical qualifications in the area was offering a more thorough review of expenses since expenses applied to speech-language therapy services have shown an accelerated pattern of growth, with a good part of the resources given to all services at different levels of complexity, in which outpatient care stands out as the main responsible for this growth in expenses.

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