Original Article
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Speech-language therapy offer and primary health care in Brazil: an analysis based on socioeconomic development

Oferta de fonoaudiologia e atenção primária em saúde no Brasil: uma análise baseada no desenvolvimento socioeconômico

ABSTRACT

Purpose: To describe the presence of speech-language therapists (SLT) in the primary health care (PHC) in Brazil and its association with socioeconomic inequalities. **Methods:** Cross-sectional study with 17,157 PHC services in all Brazilian states. Based on the NASF External Assessment Questionnaire sub-item "speech-language therapist", which was used to answer the question "What NASF professionals support your PHC service?", in addition to contextual data (regional population, number of registered SLP, speech therapy college courses, city HDI and Gini Index). **Results:** From all the PHC services supported by NASF, 50.8% (8713/17,157) has SLPs as part of the team. Brazil's Southeast region has the higher prevalence of SLP at the team (57.4%; 5,575). South Region has the lower prevalence (28.9%; 625). The presence of SLP support is directly proportional to HDI stratum and Gini Index (average and high). **Conclusion:** There is an important limitation of public care to treat communication and swallowing disorders in Brazil.

RESUMO

Objetivo: Descrever a presença de fonoaudiólogos na atenção primária à saúde (APS) no Brasil e sua associação com desigualdades socioeconômicas. **Método:** Estudo transversal com 17.157 serviços de APS em todos os estados brasileiros. Com base no Questionário de Avaliação Externa do NASF utilizou-se o subitem "fonoaudiólogo" para a resposta à pergunta "Que profissionais do NASF apóiam seu serviço de APS?", além disso utilizou-se dados contextuais (população regional, número de fonoaudiólogos registrados, número de faculdades de fonoaudiologia, IDH da cidade e Índice Gini). **Resultados:** De todos os serviços de APS apoiados pelo NASF, 50,8% (871.317.157) tem o fonoaudiólogo como parte da equipe. A região Sudeste do Brasil tem a maior prevalência de fonoaudiólogo na equipe (57,4%; 5.575). A região Sul tem a menor prevalência (28,9%; 625). A presença do suporte fonoaudiológico é diretamente proporcional ao estrato IDH e ao índice de Gini (médio e alto). **Conclusão:** Existe uma importante limitação na oferta dos serviços fonoaudiológicos públicos no Brasil.

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INTRODUCTION

Primary Health Care (PHC) is considered a major organizational strategy at public health systems, and the World Health Organization (WHO) recommends the execution of unifying actions to promote universal health access and social care systems, consolidating an integrated approach at all healthcare levels[1]. PHC inserts people into the healthcare system independent of their demands. It emphasizes healthcare along time, in addition to determinants of health by means of social and physical environments, where those people live and work, without focusing on diseases individually. Health optimization is a priority, as well as decrease of disparity between population subgroups, providing equal access to health services to all population groups[2].

In this context, the Brazilian national health system – *Sistema Único de Saúde* (SUS), through its universality principle, has the Family Health Strategy (FHS) as one of the forms of organization. The FHS operates in restricted population and territory, ensuring the development of work to support the basic characteristics of quality on PHC[3,4]. The FHS structure and operation processes are described in detail elsewhere[5]. The process, above all, considers the identification of cultural and community characteristics of the covered population[6].

The PHC may vary from country to country. It is usually structured by family doctors and nurses; however, especially in developing countries, it is also supported by other professionals[2]. In 2008, the creation of family health support teams (NASF, *Núcleos de Apoio à Saúde da Família*) established an important development and improvement pattern for multidisciplinary teams in Brazilian health system[7]. NASF is composed by a multidisciplinary team and works with the PHC teams, sharing and supporting clinical practice on restricted locations. It aims to consolidate eight healthcare guidelines: interdisciplinarity, intersectoriality, location, comprehensiveness, social control, continuing education, health promotion and humanization. The three types of NASF teams and their professional structure are described by Ordinance 154[7] and NASF Guidelines[8]. NASF teams may include the following professionals: acupuncturist; social worker; physical educator; pharmacist; physical therapist; speech-language therapist; gynecologist/obstetrician; homeopathist; nutricionist; pediatrician; psychologist; psychiatrist; occupational therapist; geriatrician; intern (general clinician); occupational health physician; veterinarian; professional with training in art and education (art educator) and public health specialist[7].

The speech-language therapist (SLP) role in Brazil's PHC is primarily achieved through NASF. In addition to evaluation and rehabilitation of human communication and swallowing disorders, they also join the health team in discussions of clinical cases, shared services, home visits and conjoined development of therapeutic projects. When it comes to PHC, the SLPs are expected to use social/demographic, epidemiological and environmental information to develop an interdisciplinary work and create conjoined actions into familiar and social contexts, collaborating with FHS[9].

In a state of the Central-West Region of Brazil, a study assessing the Brazilian information health systems demonstrated the deficit on speech-language therapy assistance on SUS – most professionals live in large cities or in municipalities with at least 40,000 people[10]. Only 4 teams of a metropolitan region of a state in the Northeast Region have SLPs – the number is lower than other healthcare-related professionals[9]. In another state of the Northeast Region, only 19 municipalities had a SLP in their NASF teams; however, there was a need to use speech-therapy to overcome barriers and effectively operate as per SUS' principles and guidelines[11].

This is a pioneer study, presenting data of SLP insertion on PHC-NASF teams from all regions in Brazil. Only few NASF teams have SLPs in their teams, with little information restricted to specific municipalities or regions, in addition to experiences reports. There is an important lack of studies ascertaining SLP role in primary health care, as well no previous studies verifying speech-language therapy care at SUS by NASF teams in Brazil. With the goal to solve this important gap, this study aims to describe the presence of the SLP in the support to PHC by family health teams in Brazil and its association with socioeconomic inequalities.

METHODS

This is a cross-sectional study. Data from the population were collected from the second cycle of the Program for Access and Quality Improvement of Primary Care (PMAQ-AB, *Programa de Melhoria do Acesso e da Qualidade*, 2014), encompassing 39,943 primary healthcare teams, provided the data used in this study. At least 17,157 are supported by NASF teams. Data are publicly available in the website of the Department of Primary Care of the Brazilian Ministry of Health. The datasets pertaining to PMAQ NASF were downloaded and edited to allow data analysis.

The PMAQ aims to encourage managers and health teams to improve the quality of health services offered to citizens of the territory. For this, it proposes a set of qualification strategies, monitoring and evaluation of the work of the health teams. The program was launched in 2011, where it began its first cycle, only in primary care. In 2013-2014, during its second cycle, it included NASF and Centers of Dental Specialties, in addition to the primary care services. The present study used data of the second cycle. The third cycle is currently being carried out, including the same services of the second. Each cycle is composed of 3 phases: 1st is Adhesion and Contracting, 2nd is Certification (which includes the external evaluation that provided data analyzed in this study), and 3rd is Re-contracting.

The PMAQ is a national program that evaluates services. The external evaluation is carried out in a multicenter and integrated way, by several Education and Research Institutions directed by the Ministry of Health. The results refer to the Module II of the external evaluation, and questions were answered by the workers in the Health Units, through interview and verification of documentation *in loco*.

Services and workers took part of PMAQ voluntarily, assuming an initial process of agreement between teams and municipal managers. Services were applied using an electronic form that was fulfilled by the municipal managers. Data was

collected by external evaluators who were selected and trained during one week prior to data collection. The training process was focused on the activities that would be later developed during data collection.

Data collection was performed with portable tablet computers, which contained a web-based application covering three modules of PMAQ: infrastructure, work processes and the satisfaction of the users with the health services. After the external evaluation, the data collected were sent via web to a sever of the Ministry of Health for validation. Aiming to define minimum and maximum standards and quality parameters for ascertainment of the information collected in loco, the validation procedures were available in the manual entitled "Protocol of consistency analysis and validation of data collected" distributed by the Ministry of Health to the participating Universities of the program. More information about PMAQ can be viewed on the web page[12].

Data from speech-language therapist (SLP) insertion into NASF teams was collected using answers from the External Assessment Tool, Module II – Interview (*Instrumento de Avaliação Externa, Módulo II – Entrevista*), sub-item Speech-language therapist (Yes/No), question "What NASF professionals participate in your team?". Data from Brazilian Institute of Geography and Statistics (IBGE, *InstitutoBrasileiro de Geografia e Estatística*) was accessed to collect about the population projection for 2014[13]. Additionally, data from SLP professionals were extracted from the speech-language therapy national council registers and the total number of universities with SLP graduation courses across Brazil[14].

Data from Atlas of Human Development in Brazil for the Municipal Human Development Index (MHDI) was also collected, as well as the Gini Index, in order to evaluate the income among the Brazilian municipalities[15,16]. The HDI is a summary measure of the human development useful to establish govern policy priorities and the Gini index measures income inequality, mortality and distribution of health services, in a scale ranging from 0 to 1. The HDI was stratified into "low" (0 to 0.599), "average" (0.600 to 0.699), and "high" (0.700 to 1);

for the Gini index, 0 to 0.599 was high, 0.600 to 0.699 was average and 0.700 to 1 was low.

Data were analyzed via *SPSS v.22*. Descriptive analyses, as well absolute and relative frequencies of the studied variables were used to characterize the study population.

This study was approved by the Ethics Committee of the Federal University of Rio Grande do Sul under register no. 21904, following Resolution 466/12 and complementary resolutions of the National Health Council. All participants in this study signed the Informed Consent Term.

RESULTS

There are 86 speech-language undergraduate programs on colleges and universities across Brazil, and 36,310 SLPs registered on the National Council. For a population of 202,768,562 people, there are 39,943 family health teams and 3,898 NASF teams, and 17,157 PHC teams relying on NASF support, half of them (8,713-50.8%) with SLP work support.

Data characterization on population, total number of registered SLP, number of colleges/universities, distribution of NASF teams and offer of SLP on primary health care are presented on Table 1. It is noteworthy that, although the Southeast is the most densely populated region in Brazil (85,115,623 people), the Northeast Region (56,186,190 people) has the biggest proportion of SLP work supporting on NASF teams (6.98 SLPs/100,000 people). The South Region (29,016,114 people), on the other side, has the least proportion, with 2.15 SLP/100,000 people. In Brazil, the mean proportion for SLP working support on NASF teams is 3.72 SLPs/100,000 people. There are no regions in Brazil with SLP supporting on NASF teams above 60.0%. However, all Brazilian regions have a wide presence of SLP into the states.

Table 2 presents HDI and Gini Index data regarding the number of healthcare teams supported by NASF. It is worth mentioning that the better HDI (average and high), the higher the presence of NASF matrix support. Accordingly, there is the Gini Index data, whose high and average strata are also associated to increased presence of support in NASF.

Table 1. Distribution of speech-language pathologists in primary health care (PHC) in Brazil by region in relation to the number of inhabitants, total number of registered speech pathologists, number of colleges/universities, distribution of every 100,000 people. Brazil, 2016

VARIABLE	Population (inhabitants)	Total of registered SLT	Total of speech-language therapy colleges	*N* teams with SLT support	SLT supportto PHC (%)	SLT/100,000 people
Southeast Region	**85,115,623**	**22,619**	**39**	**3,245**	**57.4***	**3.81**
São Paulo	44,035,304	11,920	21	1,185	62.0	2.69
Espírito Santo	3,885,049	657	2	32	55.2	0.82
Minas Gerais	20,734,097	4,098	8	1,436	56.1	6.92
Rio de Janeiro	16,461,173	5,944	8	592	56.5	3.60
South Region	**29,016,114**	**5,348**	**18**	**625**	**28.9***	**2.15**
Rio Grande do Sul	11,207,274	2,102	7	86	25.5	0.77
Santa Catarina	6,727,148	1,190	2	358	39.1	5.32
Paraná	11,081,692	2,056	9	181	22.2	1.63

*average per region; SLT: Speech-language therapist

VARIABLE	Population (inhabitants)	Total of registered SLT	Total of speech-language therapy colleges	N teams with SLT support	SLT supportto PHC (%)	SLT/100,000 people
Central-West Region	**15,219,608**	**2,680**	**5**	**482**	**31.8***	**3.16**
Mato Grosso do Sul	2,619,657	438	1	115	3.9	4.39
Mato Grosso	3,224,357	452	2	65	33.9	2.01
Distrito Federal	2,852,372	691	1	31	54.4	1.09
Goiás	6,523,222	1,099	1	271	49.3	4.15
Northeast Region	**56,186,190**	**6,332**	**17**	**3,924**	**54.1***	**6.98**
Alagoas	3,321,730	244	1	121	25.8	3.64
Sergipe	2,219,574	268	1	102	68.9	4.60
Rio Grande do Norte	3,408,510	515	2	320	51.9	9.39
Paraíba	3,943,885	435	1	496	50.7	12.58
Piauí	3,194,718	457	1	412	59.2	12.90
Maranhão	6,850,884	556	2	228	66.7	3.33
Bahia	15,126,371	1,295	5	540	35.2	3.57
Ceará	8,842,791	1,100	1	855	65.0	9.67
Pernambuco	9,277,727	1,462	3	850	64.3	9.16
North Region	**17,231,027**	**1,806**	**7**	**437**	**38.8***	**2.53**
Amapá	750,912	106	1	88	83.8	11.72
Amazonas	3,873,743	537	2	80	48.8	2.06
Pará	8,073,924	734	1	187	50.8	2.32
Rondônia	1,748,531	214	1	27	24.8	1.54
Roraima	496,936	51	1	4	20.0	0.80
Tocantins	1,496,880	119	1	42	22.2	2.80
Acre	790,101	45	0	9	21.4	1.14

*average per region; SLT: Speech-language therapist

Table 2. Frequency of speech-language therapists in primary health care by Human Development Index (HDI) and Gini Index rate and in Brazil, 2016

HDI	N teams with speech therapy support		Gini Index	N teams with speech therapy support	
	Yes	No		Yes	No
0-0.599 (low)	3,145 (29.9%)	1,601 (18.9%)	0-0.599 (high)	6,566 (75.3%)	7,185 (85.0%)
0.600-0.699 (average)	3,073 (29.2%)	2,482 (29.4%)	0.600-0.699 (average)	2,119 (24.3%)	1,232 (14.5%)
0.700-1 (high)	4,295 (40.9%)	4,361 (51.7%)	0.700-1 (low)	28 (0.4%)	27 (0.5%)

DISCUSSION

In Brazil, only 21.8% (8,713) of the teams rely on the speech therapy matrix support through NASF. These findings demonstrate a low number of NASF teams and the limitation to access multiprofessional teams. Analyzing the total amount of NASF teams, the proportion of SLP working support on NASF in the country is 50.8% (8,713). These percentages (21.8% and 50.8%) also demonstrate the limitation access to healthcare on speech-language therapy on PHC.

Adding a SLP to a NASF team constitutes in a direct relationship with the amount of SLP undergraduate courses in each Brazilian region; however, the relationship between the professionals registered at the federal SLP council and the presence of matrix support in PHC is homogeneous. An exception is the South Region, where there are 5,348 registered SLPs, 18 speech therapy undergraduate courses and 30.2% of with SLP work supporting on PHC. It is known that the role of universities in regional development is being considered as key in the development of regions[17]; this study points out the university important role in the insertion of the SLP on a NASF team.

Brazil and its wide territory has historically being challenged with regional income inequalities reflecting in an uneven health care workforce distribution. South and Southeast are the mostly developed regions, while North and Northeast are the poorest and with the bigger inequality index; their specific characteristics reflect in the scope of healthcare[18]. However, our study found more structured speech therapy support in the poorest regions. The social differences in Brazil are associated to municipalities formation, with differences intrinsically linked to social, economic and cultural development, visible through the disproportional municipal HDIs[18]. Under analysis of the HDI and SLP working support, there is a clear distinction between municipalities, demonstrating that places with increased human development have greater access to healthcare in human communication. The poorest municipalities has poorer integration in all levels of healthcare and also do not ensure appropriate coverage of all potential issues in PHC.

Regional differences interfere in public policies and application of resources in the health area; health policy needs to be aligned with population's needs, which mean to include its determinants and to promote equity[19]. In this context, the literature has two valuable sources for theorizing about the differences in the provision of health services. One of them is the The Inverse Care Law, presenting the trend to availability of health care vary inversely with population needs[20]. The other one is the Reverse Equity Hypothesis, stating that new public health programs and interventions initially reach people of a higher socioeconomic level, increasing the inequities between rich and poor[21]. Social injustices derive from stratified social structures in which individuals encounter differentiated opportunities. Social inequalities in health conditions, access and use of health services express and characterize inequities. Adequate primary health care services could help to reduce social inequalities in health conditions[22].

Since 2001 it is possible to verify a big decrease on the inequality of income distribution in Brazil[23]. Income distribution is a strong correlated factor, with several social indicators, including life expectancy, access to health and education, crime rates and mortality. Places with good income distribution have better social indicators, improving population's quality of life; literature reveals a trend to high and average indexes in municipal income equality reflects in the increased presence of matrix support in the NASF teams and also in the presence of SLP[24], as evidenced in the Gini Index data. Thus, the results support the need to invest in strategies to minimize the differences in the access to health in the unequal and vulnerable population subgroups.

Most recent studies[25-27] present decreasing inequalities, even though the health system in Brazil remains deficient. Unfortunately, this reality can be seen in the access to the SLP. The access to treatment of human communication disorders is quite limited. Elsewhere in the world, this reality is no different. The shortage of accessible speech-language pathologists is a challenge to overcome in North America, especially in rural areas[28]. Thus, more speech pathologists are needed in this locality.

Speech-language therapy has a wide field of work, focusing on specific protection, diagnosis, early treatment and rehabilitation, covering areas of oral and written language, hearing, voice, orofacial motricity and dysphagia. Also, there are several needs and demands of the population for SLP attendance, which leads to lack of access to health care for the main functions performed by the human being, as speaking, hearing and deglutition, reflecting on limitations on daily-life activities.

This study has some limitations and does not represents the totality of SLP in PHS, only SLP through NASF – some of them work on municipality health services not encompassed by NASF data on PMAQ. However, there is no other study in the world at the national level of representative professionals, the proportion of them and the population of the region served. There are no previous reports about the population needs of speech-language therapy care. Future studies estimating the size of speech therapy workforce required for the provision of comprehensive care in PHC could help on discussion and implementation of strategies to widen the speech therapy access and the multidisciplinary presence.

CONCLUSION

The communication disorders care offered to the Brazilian population by the NASF/SUS is limited. Integrality on care is still a problem in Brazil's PHC. The access to appropriate management of those disorders is also directly linked to social/economic development. Future studies using data from the next PMAQ cycles are necessary to generate a time series that may allow the evaluation of changes in terms of access to speech, language therapy.

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Author contributions

RSR and JBH planned the study, collected and analyzed the data, and wrote the first draft of the paper. FNH, BNGG and JGS contributed to the design and analysis of the study and commented on drafts of the paper. All authors read and approved the final manuscript.