





Language disorders in people who communicate using sign language: an integrative review

Transtornos de linguagem em pessoas que se comunicam por língua de sinais: revisão integrativa

Trastorno del lenguaje en personas que se comunican por lengua de señas: revisión integradora

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Abstract

Introduction: When a language disorder presents itself since childhood and is not diagnosed or treated, regardless of the language and its modality, it can have a series of consequences, in all stages of life. **Purpose:** To identify and analyze the scientific production that addresses the occurrence of language disorders in deaf people who communicate using sign language. **Research strategies:** Search in national and international literature in databases Embase, ERIC, LILACS, PubMed and Scielo. The guiding question was “How does Speech Language Therapy address the cases of deaf signers who are affected by language disorders in this modality?”. **Selection criteria:** Manuscripts that addressed speech language therapy practices in language disorder conditions in a population of deaf signers. **Results:** 295 articles were identified; after applying the eligibility criteria, eight were included in the analysis. The time interval found between publications was 12 years (from 2007 to 2018); most studies were from the United Kingdom, with observational design and with a restricted sample. **Conclusion:** The number of studies that address language disorders in deaf sign children is scarce, especially in the national context. This finding evidences the need for studies that address speech language therapy intervention practices in these disorders, enabling the training of speech language therapists regarding clinical practices.

Keywords: Sign language; Language disorders; Language

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Authors' contributions:

NSLS: contributed with study design and data collection, analysis and interpretation, as well as elaboration of the manuscript. AMCA: advisor of the study; contributed with study design, data collection, analysis and interpretation, as well as final review of the manuscript.

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Received: 17/05/2022

Accepted: 14/02/2023



Resumo

Introdução: Quando um transtorno de linguagem se apresenta desde a infância e não é diagnosticado ou tratado, independente da língua e de sua modalidade, pode acarretar uma série de consequências em todas as fases da vida. **Objetivo:** Identificar e analisar a produção científica que aborda a ocorrência de transtornos de linguagem em pessoas surdas que se comunicam por língua de sinais. **Estratégia de pesquisa:** Levantamento da literatura nacional e internacional nas bases de dados, Embase, ERIC, LILACS, PubMed e Scielo. A pergunta norteadora foi “Como a Fonoaudiologia aborda os casos de pessoas surdas usuárias de língua de sinais e que são acometidas por transtornos de linguagem nessa modalidade?”. **Critério de seleção:** Artigos que abordavam práticas fonoaudiológicas em quadros de transtorno de linguagem em população usuária de língua de sinais. **Resultados:** Foram identificados 295 artigos, e após aplicar os critérios de elegibilidade, oito foram incluídos na análise. O intervalo de tempo de publicação encontrado foi de 12 anos (de 2007 até 2018), estudos majoritariamente do Reino Unido, de delineamento observacional e ainda com amostra restrita. **Conclusão:** Há escassez de estudos que abordem os transtornos de linguagem em crianças surdas sinalizadoras, principalmente no âmbito nacional. Esse achado chama atenção para a necessidade de estudos que abordem práticas fonoaudiológicas de intervenção nesses transtornos, viabilizando a formação dos fonoaudiólogos quanto às práticas clínicas.

Palavras-chave: Língua de sinais; Transtorno da linguagem; Linguagem

Resumen

Introducción: Cuando un trastorno del lenguaje se presenta desde la infancia y no es diagnosticado ni tratado, independientemente del lengua y su modalidad, puede tener una serie de consecuencias en todas las etapas de la vida. **Objetivo:** Identificar y analizar la producción científica que aborda la ocurrencia de trastornos del lenguaje en personas sordas que se comunican por lengua de señas. **Estrategia de investigación:** Relevamiento de literatura nacional e internacional en bases de datos, Embase, ERIC, LILACS, PubMed Y Scielo. La pregunta orientadora fue «¿cómo aborda la logopedia los casos de personas sordas que utilizan la lengua de señas y que se ven afectadas por trastornos del lenguaje en esta modalidad?» **Criterios de selección:** Artículos que abordan las prácticas de logopedia en condiciones de trastornos del lenguaje en una población que usa lengua de señas. **Resultados:** Se identificaron 295 artículos, ocho fueron incluidos en el análisis luego de aplicar los criterios de elegibilidad. El intervalo de tiempo de publicación fue 12 años (de 2007 a 2018) en su mayoría de Reino Unido, con diseño observacional y aún con una muestra restringida. **Conclusión:** Hay una escasez de estudios que aborden los trastornos del lenguaje en niños sordos de signos, principalmente a nivel nacional. Este hallazgo llama la atención sobre la necesidad de estudios que aborden las prácticas de intervención logopédica en estos trastornos, permitiendo la formación de logopedas en las prácticas clínicas.

Palabras clave: Lengua de señas; Trastornos del lenguaje; Lenguaje

Introduction

Language is the main form of communication of human beings, and its most critical period of development occurs between birth and 3 years of age. Language development can be observed by developmental milestones, such as babbling, which emerges around 5 months, and the production of the first word, which usually happens until the end of the first year of life¹.

The language development of children that communicate through visuospatial languages can occur within the same period as normal-hearing children who use auditory-oral languages. However, they must be exposed to the adequate input in the timely age, so they can babble with their hands at around 6 months and sign their first words until 12 months old. Nevertheless, approximately 90% of children who have sign language as their mother tongue are exposed to language late, as they are born to normal-hearing parents who are not fluent in sign language².

It is also important to emphasize that not all children are diagnosed early. In several cases, even when there is early diagnosis, exposure to sign language is not prioritized, invalidating deaf identity and culture³. Oral languages are predominant in our society, and sign languages are marginalized. Deafness is still stigmatized as a cognitive limitation⁴.

Speech-language therapy approaches directed to the deaf community are mostly oralists, that is, their main purpose is the development of auditory and speech abilities. However, it is necessary that other approaches are disseminated in the area, valuing and providing opportunity for deaf children to also develop their natural language⁵.

Sign languages are as complete and complex as oral languages. They are the natural language of deaf individuals, as they do not require auditory stimuli to be developed⁶. In Brazil, the Brazilian Sign Language (Libras) was recognized as an official language with its own structure only in 2002, by the federal law 10,436, which recognizes it as a legal means of communication⁷. In 2005, decree number 5626 included a Libras class in the mandatory curriculum of all programs in the areas of education and health, offering it also as an elective in other higher education programs⁸. This measure aims to guarantee access to communication, information, education, and speech-language therapy services for the deaf community. Nonetheless,

academic training is still considered insufficient. It must advance and systematize the workload and the content covered in classes, in order to provide adequate quality to speech-language therapy practices⁹.

When a language disorder is not diagnosed or treated in childhood, it may cause a series of consequences for the child's cognitive, social and psychological development¹⁰. The term language disorder is usually attributed exclusively to the oral modality, however, it is also valid for the visual modality¹¹. Hence, atypical development can affect sign languages, as well as oral languages.

Speech-language practice for language disorders in sign languages is an area in expansion. The first case studies were published in United States and United Kingdom, and some assessment protocols for sign language were created in several countries, including Brazil. In 2019, we had significant progress with the approval of the Committee of Sign Language and Bilingualism for the Deaf by the Brazilian Speech-Language Pathology and Audiology Association. This committee aims to integrate active professionals in the area, promoting discussions, proposing and improving public policies for the deaf community¹². With the increase in the number of studies in the area, it is imperative to conduct a literature review in order to summarize the knowledge that has been evidenced.

Objective

This study had the purpose to identify and analyze the scientific production that addresses the occurrence of language disorders in deaf individuals who communicate through sign language.

Search strategies

This study is an integrative literature review conducted according to the following stages: (1) delimitation of the theme; (2) elaboration of the guiding question; (3) definition of the literature search criteria; (4) data collection; (5) critical analysis of the studies retrieved; (6) interpretation of the results; and (7) presentation of the integrative review or synthesis of the knowledge.

The guiding question was "How does Speech Language Therapy address the cases of deaf signers who are affected by language disorders in this modality?"

To answer the question, five electronic databases were consulted: Embase, Education Resources Information Center (ERIC), Literatura Latino-Americana e do Caribe em Ciências da Saúde (LILACS), US National Library of Medicine (PubMed) e Scientific Electronic Library Online

(SciELO). Searches were conducted in November 2021 and used combinations of the following descriptors, mediated by boolean operators: in Portuguese, “linguagem” and “língua de sinais”, and in English, “language impairment”, “language disorder” and “sign language”, as showed in Chart 1.

Chart 1. Search strategies used in the databases

Database	Search strategy
Embase	("language impairment" OR "language impairments" OR "language disorder") AND "sign language"
ERIC	("language impairment" OR "language impairments" OR "language disorder") AND "sign language"
LILACS	((linguagem) AND NOT (escrita)) AND (língua de sinais)
PubMed	("language impairment" OR "language impairments" OR "language disorder") AND "sign language"
SciELO	("linguagem" AND NOT "escrita") AND "língua de sinais"

The stages of identification and selection of the manuscripts were conducted by two independent reviewers. All results obtained in the search were transposed to an Excel spreadsheet. Doubled articles were identified and excluded. The screening stage considered the title of the article and then the abstract, applying the inclusion and exclusion criteria.

Selection criteria

Inclusion criteria were manuscripts that addressed speech-language therapy practices in language disorder conditions in a population of deaf signers. No limitations of language or year of publication were applied. Besides the exclusion of doubled articles, manuscripts that presented only elaboration of assessment tests, theoretical debates or editorials were also excluded.

Data analysis

After the selection of manuscripts, the following information were extracted and registered in a table: authors; year of publication; title; country; type of study; age range of participants; number of participants; objective and main conclusion.

Results

The search retrieved 295 studies, among the five databases consulted (Figure 1). After exclusion by duplicity, 246 articles were considered in the selection stage. Eight were included for complete reading, as they matched the eligibility criteria (Table 1).

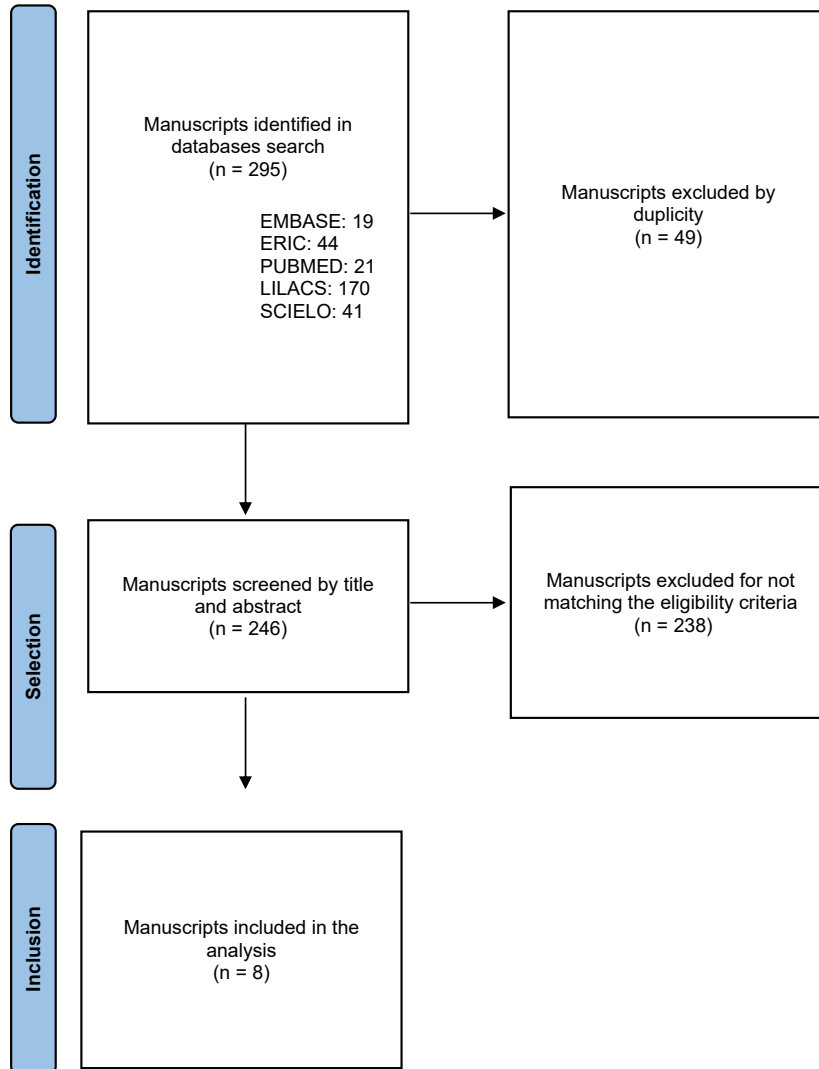


Figure 1. Flowchart for the selection of studies

To describe the manuscripts that were included in the analysis, data were presented in chronological order. Regarding year of publication, there was an interval of 12 years (from 2007 to 2018), with a maximum of one publication per year.

Most studies were published in the United Kingdom (62.5%), while 25% were published in Brazil, and 12.5% in the United States. As for study designs, 75% were observational and 25% were case studies.

Study samples had between 11 and 17 participants in 62.5% of the manuscripts; one study had the largest sample, with 53 participants, and the remaining had only one participant. The selected studies comprised mostly children and adolescents with ages ranging from 3 to 14 years, except for one manuscript that included participants with ages between 3 and 22 years.

Table 1. Characterization of the selected studies

Author	Year	Original title	Country	Type of study	Participants' age range	Number of participants	Objective	Main conclusion
Morgan G, Herman R, Woll B	2007	Language impairments in sign language: breakthroughs and puzzles	United Kingdom	Case study	5 years	1	To describe the assessment of a deaf child who was exposed to British sign language from birth, by fluent adults.	Preliminary results showed that language disorders are not exclusive of the oral language modality.
Mason C, Rowley K, Marshall CR, Atkinson JR, Herman R, Woll B, Morgan G	2010	Identifying specific language impairment in deaf children acquiring British Sign Language: Implications for theory and practice	United Kingdom	Observational	5 to 14 years	13	To identify specific language impairment in deaf children acquiring sign language.	Although subjects were paired by age and linguistic experience, they presented delay in the development of language abilities. The impairments could not be justified by poor exposition to language, impaired cognitive, social or motor abilities.
Marshall CR, Rowley K, Mason C, Herman R, Morgan G	2013	Lexical organization in deaf children who use British Sign Language: Evidence from a semantic fluency task	United Kingdom	Observational	7 to 14 years	13	To investigate whether there is a difference between semantic fluency of deaf signers with and without specific language impairment.	Deaf children with SLI were not different from their peers regarding lexical organization in sign language, however, their lexical access to the signs was less efficient.
Herman R, Rowley K, Mason C, Morgan G	2014	Deficits in narrative abilities in child British Sign Language users with specific language impairment	United Kingdom	Observational	5 to 14 years	17	To compare the narrative abilities of deaf signers with and without language disorder.	The group with language disorder produced shorter, less structured and grammatically simpler narratives when compared to their peers. Narrative may be a marker of language disorders, despite the linguistic modality.
Marshall CR, Mason C, Rowley K, Herman R, Atkinson JR, Woll B, Morgan G	2014	Sentence Repetition in Deaf Children with Specific Language Impairment in British Sign Language	United Kingdom	Observational	7 to 12 years	11	To compare the sentence repetition abilities of school-age deaf signers with and without SLI.	The group with SLI were less accurate in their performance than the control group, which corresponds to the pattern observed in hearing individuals with SLI.
Barbosa FV	2016	A Clínica Fonoaudiológica Bilingue e a Escola de Surdos na Identificação da Língua de Sinais Atípica	Brazil	Observational	3 to 22 years	53	To describe the process for detecting cases of atypical sign language and their referral to a health service prepared to attend to deaf signers.	The results emphasize the importance of the interaction between school and specialized clinic in order to optimize early diagnosis of language disorders in deaf signers.
Quinto-Pozos D, Singleton JL, Hauser PC	2017	A Case of Specific Language Impairment in a Deaf Signer of American Sign Language	USA	Case study	11 years	1	To describe abilities and difficulties of a deaf adolescent that used sign language and had specific language impairment.	In addition to proposing adapted diagnostic criteria of SLI in deaf signers, the study highlights the importance to consider the possibility of SLI in modalities different than oral.
Guimarães CF, Campello ARS	2018	"Trocas nos sinais": caracterização de processos fonológicos ocorridos durante a aquisição de Libras por pré-escolares surdos	Brazil	Observational	3 to 7 years	15	To describe the characteristics of phonological processes identified in the sign language of deaf preschoolers.	All deaf children in the study produced signs with phonological processes, corroborating that this is a natural developmental phenomenon also in sign language. The most common process was assimilation, and the hand configuration parameter was most affected and had greater occurrence in the passive hand.

Discussion

This study analyzed scientific publications addressing the occurrence of language disorders in deaf signers.

The earliest studies we found were from 2007, even though we did not limit our search by year of publication. This indicates that the theme is considerably recent - it has been discussed for only 14 years. Even so, there is still a very limited number of publications, not exceeding one per year. Another notable observation regards the sample size of the studies: almost all of them describe less than 20 participants; the study with a broader sample has 53 participants and identified only 13 individuals with language disorder¹³.

United Kingdom stands out in the number of manuscripts published. However, most of the publications are from the same group of authors, which indicate a lack of interest in the scientific community to develop studies in this area. Although Brazil has two publications on the theme, the first one was published in 2016¹³, that is, almost ten years after the pioneer study².

The predominant study design is observational, which shows a lack of intervention studies that are specific for sign language. This shortage is added to the difficulty for identification and diagnosis, compromising the elaboration of intervention strategies in the speech-language therapy practice that are specific to cases of atypical sign language development¹⁴.

Among the manuscripts analyzed, we observed two different approaches to language disorders: some studies seek to analyze general language alterations, while others are concerned with specific impairments at some linguistic level. Three studies showed impairments in more global aspects of language, such as comprehension and expression^{2,15,16}, which is not surprising, as two of them are case studies (Morgan, Woll & Herman (2007), and Quinto-Pozos, Singleton and Hauser (2017)). Studies focusing on more specific aspects addressed semantic fluency¹⁷; sentence repetition¹⁸ and narrative abilities¹⁹. These studies also had a character of investigation, serving as basis for further research regarding diagnostic assessment of disorders in this linguistic modality.

The two national studies deserve a deeper analysis, as they present a distinct approach. The first manuscript focused on the interaction between

clinical speech-language therapy and school, proposing to train teachers to identify students with possible alterations and then screen the referred students. The results showed that deficits at phonetic-phonological, lexical, syntactic, and pragmatic levels can affect individuals in isolation or concomitantly¹³. The second manuscript had the aim to investigate phonological processes observed in the production of signs. In its conclusion, the study identifies that all processes observed corresponded to those expected in the typical language development of speakers, thus it did not identify any language disorders²⁰.

Literature shows a lack of studies in the area, exposing a possible omission of Speech-Language Pathology on the theme. Further research is necessary, especially intervention studies, since the results suggest that there is a population that may have language disorders but is devoid of evidence-based strategies for specific speech-language intervention, as there is no basic training in undergraduate Speech-Language Pathology programs⁹.

Conclusion

The analysis of the selected manuscripts showed a lack of studies in the area, especially in the national scenario, indicating the need for further studies.

Most studies evidence the occurrence of language disorders in the visuospatial modality at some linguistic level, except for one that identified processes that were similar to the expected for oral language development. However, even with this evidence, there is still no research exploring speech-language intervention practices in these disorders, suggesting a deficit both in the training of speech-language therapists and in clinical practices.

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