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Early Identification of Pre-school Children with Speech-language Disorder in Primary Health Care Settings

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Abstract

Speech-language disorders in pre-school children is considered a public health problem since its international prevalence is reportedly to be 20%. This study aimed to identify European-Portuguese pre-school children with speech-language disorder through RALF speech-language screening (*Rastreio de Linguagem e Fala*), in primary health care settings. RALF is a reliable and valid instrument that revealed strong levels of reliability, sensitivity and specificity for European-Portuguese (EP) pre-school children.
10 nurses with more than 6 years of clinical experience in a primary health care centers administered RALF to 37 (5-6 years old) EP children as part of health-child care routine.
Results indicate that 21.6% of children did not pass the RALF screen and were referred to an in-depth speech and language assessment.
This finding was in agreement with international research and reinforces the need for an early and precocious identification of the speech-language disorder in pre-school children. That is, way before the disorder has installed and has an impact on the academic, social and emotional development. This action-research study also reveals the important of using a valid, reliable, sensitive, and specific, as well as, culturally and linguistically adequate screening instruments by the health professionals as part of health-child care routine in primary health care centers.

Keywords: children, screening, health care, prevention, speech-language development

Introduction

Early identification of children at risk for speech and language disorder allows an intervention at a young age when best possibilities for development exist, supporting the need for early screening as part of health-child care routine (Mossabeb, Wade, Finnegan, Sivieri, & Abbasi, 2012; Nelson, Nygren, Walker, & Panoscha, 2006; Schuster, 2000). Approximately 20 per cent of 4-year-old children may present a language disorder (Reilly et al., 2010). Law et al. (2017) recently suggest that this disorder could be considered a public health problem.

Screening instruments do not identify the specific problems, but allow a quickly identification of children who may need a detailed assessment in speech-language therapy (Semel, Wiig, & Secord, 2004). Screening instruments are usually carried out by nurses, speech-language pathologists, pediatricians, general practitioners, psychologists, among other health professionals (Council on Children with Disabilities, 2006; Nelson et al., 2006).

In Portugal, the Child Health Program for Primary Health Care (*Direção-Geral da Saúde, 2012*) required that all Portuguese 5-year-old children should be screened by nurses and general practitioners to verify if they follow the typical global development and are adequate for school age pre-requisites. This screening has been implemented by the translated and Modified Mary Sheridan Screening Scale (1983). However, this instrument was not validated for European-Portuguese (EP) pre-school children. It has few translated and not culturally EP adequate markers for speech and language development. Sensibility and specificity psychometric parameters were not assured. Recently the pediatric screening instrument (*Rastreio de Linguagem e Fala - RALF*) was validated for Portuguese pre-school children (Mendes, Valente, & Lousada, 2015, 2016). This screening instrument included items for different domains: 1. Receptive; 2. Expressive (e.g., "Use of simple sentences" for the 3-4 year old section, the example is "Did the child say sentences like (*The girl is eating the cake?*); 3. Articulation and phonological skills (e.g., "Use consonants in coda and consonant clusters in the following words: ***br****aço*, ***cl****ara*, *sa****l****to* and *co****r****da"* for the 5-6 year old section is); and 4. Metalinguistic awareness.

This tool aims to identify children who may be at risk of a speech-language disorder and in need to be assessed by a Speech-Language Pathologist. RALF's results of sensitivity and specificity were above the 70% recommended threshold usually mentioned in the literature, indicating that it is able to differentiate a normal from a disordered speech-language developing child. Cronbach's alpha values were above .70 suggesting good internal consistency. Interjudge reliability, calculated through ICC was 99.04%, meaning an excellent reliability (Lousada, Mendes, & Valente, 2017).

The present study aims to early identify EP children with speech and language disorder in primary health care setting.

Methodology

Ten nurses with more than 6 years of clinical experience in a primary health care centers applied RALF speech-language screening to 37 (5-6-year-old) EP children as part of health-child care routine.

Ethical approval was granted by the Ethics Committee, Research Unit in Health Sciences, Coimbra, Portugal (reference number 14/2016). First, in one-hour meeting two speech-language pathologists (second and last authors) presented in detailed the project's objective, target population and examiners, as well as, children criteria. They also presented RALF's screening

items, administration, scoring procedures, record form, referral procedures and validity process. Examples were presented and discussed, to clarify all nurses' queries. Secondly, RALF was applied by 10 nurses during 4 months in one primary health care center.

Children's inclusion criteria were: 1) Age between 5 to 6 years-old; and 2) EP as native language. Exclusion criteria were: 1) Children enrollment in speech and language therapy; and 2) Children with another condition such as hearing impairment, emotional or behavioral difficulties, autism, neurological impairment or general developmental problems.

In order to control these criteria, a sociocultural questionnaire characterizing child and family background was completed by caregivers. The questionnaire had two sections. The first section collected information about child's background (e.g., birth date, first language). The second section collected information about child's family background (e.g., parent's job, parent's education level). The European Society for Opinion and Marketing Research Classification (ESOMAR) (Reif et al., 1991) was adopted to classify the sample into socioeconomic groups based on occupational and educational level of the highest income family member. The crossover of these two indicators provided the final socioeconomic status group assignment.

Thirty-seven children were screened with the Global Health Examination of 5 years old children. Informed consent was obtained prior to any data collection.

IBM Statistical Package for the Social Sciences (SPSS) version 23 (IBM, Armonk, USA) was used to calculate descriptive statistics.

Results and Discussion

Thirty-seven 5-6-year-old children from different socioeconomic groups were screened. Fifteen (40.5%) were male and twenty-two (59.5%) are female. Six children (16.2%) belong to the high level, twelve (32.4%) from middle-high level, four (10.8%) from middle level, thirteen (35.1%) from low level and two (5.4%) from middle-low level.

From all the children screened (37 children), eight (21.6%) did not pass the screening of RALF and were referred to an in-depth speech-language assessment (See Table 1).

The results of 21.6% of EP 5-6 years old children that did not pass the RALF speech-language screening appear to be in accordance with international research. As it was reported previously, approximately 20 per cent of 4-year-old children may present a language disorder (Reilly et al., 2010). Even though the present study had a small sample and the final speech-language diagnostic was not provided, the obtained percentage was very similar with international prevalence for pre-school language disorders (i.e., 21.6% vs. 20%).

Table1.
Sample characterization and identification of EP pre-school children in need of an in-depth speech-language assessment.

		Fa	Fr
Gender	Male	13	40.5
	Female	22	59.5
	Total	37	
Socioeconomic Level (ESOMAR)	High	6	16.2
	Middle-high	12	32.4
	Middle level	4	10.8
	Middle-low	2	5.4
	Low	13	35.1
	Total	37	
Failed the RALF screening and an in-depth speech-language assessment was referred		8	21.6

Note: Fa = absolute frequency; Fr = Relative frequency

The present study limitations will fill in future research as follow: 1) in-depth speech-language assessment of the eight EP pre-school children in order to confirm or not the speech-language impartment; 2) increase children sample size to confirm the prevalence percentage; 3) increase nurses' sample size and health care units to guarantee a higher collaboration and implementation of the Portuguese Child Health Program for Primary Health Care. Because, as Law et al. (2017) suggest a speech-language disorder is considered a public health problem.

Conclusion

Thirty-seven (5-6-years-old) European-Portuguese (EP) children were screened with RALF speech-language screening instrument by 10 nurses with more than 6 years of clinical experience in a primary health care centers. 21.6% of children failed the screening and were referred to an in-depth speech-language assessment. These preliminary percentage results were in accordance with international research revealing that approximately 20 per cent of 4-year-old children may present a language disorder. Speech-language disorders in pre-school children is an public health problem that needs to be identify, as early as possible, in order to minimize its impact on academic success, social integration and quality of life. This study highlights the importance of using a valid, reliable, sensitive and specific, as well as, culturally and linguistic screening instrument in order to accurately identify children at risk. RALF speech-language screening revealed to be a useful tool to be administered by nurses during routine health-child care of EP speaking pre-school children. Early identification and referral to an in-depth speech-language assessment can contribute to the retardation of the disorder's progress, thereby preventing further academic, social e emotional problems.

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