



Original Article

The Prevalence of Specific Language Impairment in 5-year-old Persian-Speaking Children in Shiraz City of Iran – 2015

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ABSTRACT

Background: Specific Language Impairment (SLI) is one of the most common developmental problems resulting in referral to speech therapy clinics in the preschool years. A number of studies have been conducted to determine the prevalence of SLI in different populations. However, the prevalence of childhood language disorders in Iranian population is unknown because of the limited epidemiologic studies in the field. The aim of this study was therefore, to estimate the prevalence of SLI in 5-year-old Persian-speaking children.

Methods: This research was an epidemiological study which conducted in a three-month period in the spring of 2015 in Shiraz. The sample size was 180 children aged 5 years old including 95 boys and 85 girls whom recruited from 12 preschool centers of 9 urban areas in Shiraz by stratified sampling. The EpiSLI system was used to diagnose SLI. The Persian version of Test of language Development (TOLD-P: 3) was employed to evaluate the children's oral language skills. A number of descriptive statistics were calculated. In addition, Chi-square test was used to analyze the correlation between the prevalence of SLI with sex and area. The significant level was set to 0.05.

Results: The estimated prevalence of SLI in the population under study was estimated to be %3.3. In addition, the estimated prevalence of SLI in boys and girls was 4.2% and 2.4%, respectively. There were no significant correlation between the estimated prevalence of SLI with sex and area ($P>0.05$).

Conclusion: According to the findings of this study, it is important to employ screening system to find preschool children with SLI to prevent subsequent problems.

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Introduction

Language impairment is one of the most common developmental problems resulting in referral to speech therapy clinics in the preschool years [1]. As Tomblin et al. stated specific language impairment (SLI) is a type of developmental language disorder in which children

exhibit unexpected problems with the acquisition of spoken language [2]. Bishop and Leonard mentioned that children with SLI fall at the bottom end of the normal distribution of language competence [3]. Practically, a child who has language impairment in the absence of significant sensory, psychiatric, neurological, or intellectual disorder is diagnosed as having SLI [4,5]. In other words, as Schwartz explained SLI is an impairment of language comprehension, language production, or both in the absence of hearing impairment, the absence of a

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general developmental delay (i.e., a normal performance IQ), the absence of any neurological impairment (e.g., perinatal bleeds, seizure disorders), and in the absence of diagnosis of autism [6]. For the first time, Tomblin et al. provided a valid and reliable diagnostic system referred to as the EpiSLI system for the conduct of epidemiologic research on specific language impairment; the system is comprised of five composite scores representing performance in three domains of language (vocabulary, grammar, and narration) and two modalities (comprehension and production). Children's performance below -1.25 standard deviations in two or more composite scores were considered as language impairment [7]. According to Maxwell and Satake's definition, prevalence is the proportion of people in a population surveyed that have a disorder at a given point in time [8]. As a statistical measure, prevalence is important because (a) researchers and clinicians use to estimate the risk factors of certain disorders such as SLI [8], (b) this information is used for public health policy and planning goals, (c) variations in the prevalence of a disorder can be used to identify risk factors that predict and potentially cause the disorder [2,9].

Regarding the prevalence of SLI, data are rare and vary widely [10]. A number of studies have been conducted in order to determination of the prevalence of SLI in different populations. But, Bishop noted that the comparison of prevalence rates becomes problematic because of the lack of an agreed set of criteria for language impairment [9]. Overall, 2% to 8% of preschool children are suffered from SLI [11]. Tomblin et al. estimated the prevalence of SLI in monolingual English-speaking kindergarten children by using the EpiSLI system. They screened 7,218 children in rural, urban, and suburban areas in the Iowa state of United States of America. Their findings presented an estimated overall prevalence rate of 7.4% for SLI. The prevalence estimate for boys and girls was 8% and 6% respectively, but the difference was not significant [2]. Mohammadi et al. carried out an epidemiologic study to determine the prevalence of SLI in 5-year-old Persian-speaking children. They surveyed 436 children in urban areas in Semnan city of Iran and estimated overall prevalence rate of 3.4% for SLI. Also, they found no significant difference between boys (3.61%) and girls (3.25%) in the estimated prevalence of SLI [12]. However, Kazemi et al. conducted a systematic review on the studies of child language disorders in Persian-speaking children and concluded that the prevalence of child language disorders in Iranian population is unknown because of the limited epidemiologic studies in the field [13]. In addition, many studies have found that the children with SLI are at risk for social, behavioral, emotional, and educational difficulties [14-16]. So, it is essential to identify the exact prevalence of SLI in Persian-speaking children. Accordingly, the aim of this study was the estimation of prevalence of specific language impairment in 5-year-old Persian-speaking children in Shiraz City of Iran.

Methods

This research was an epidemiological study conducted

in a three-month period in the spring of 2015 in Shiraz, one of the biggest cities of Iran. The research protocol was approved by the Ethics Committee of Shiraz University of Medical Sciences and written informed consent was obtained from the parents of each child participating in the study. The sample size was 180 children aged 5 years old (i.e. 60-to-72 months-old) including 95 boys and 85 girls who were recruited from 12 preschool centers of 9 urban areas in Shiraz. Stratified sampling was used to select the children. The inclusion criteria included living in an urban area of Shiraz, Persian-speaking, enrolled at a preschool center, normal nonverbal IQ (>80), normal hearing, no other disabilities such as hearing loss, autism, neurogenic communication disorders, stuttering, phonological disorder, and history of abnormal communication age-related behaviors. The EpiSLI system [7] was used to diagnose the SLI. The recorded developmental history of each child and interview with the children's parent/teacher were used to obtain the information. The human figure drawing of Goodenough-Harris [17] was used to assess the intellectual abilities of children. Also, the Persian version of Test of language Development (TOLD-P: 3) was employed to evaluate the children's oral language skills [18]. Specifically, four subscales of the TOLD were used to assess the listening and speaking modalities including Picture Vocabulary, Oral Vocabulary, Grammatic Understanding, and Grammatic Completion. The listening quotient was the composite scores of Picture Vocabulary and Grammatic Understanding; additionally, the speaking quotient was the composite scores of Oral Vocabulary and Grammatic Completion. First, 190 preschool centers located in 10 areas of Shiraz city were identified. The area 10 was deleted, because it was in suburb of Shiraz. Then, there were 9 stratum that 20 children would be selected at each one. So, a number of centers were randomly selected at each area. After that, the total 5-year-old children were surveyed at the first selected center. This manner continued until 20 children were recruited. We employed 10 examiners who were undergraduate students of speech-language pathology. Although, all of them knew about SLI, we trained them about the diagnostic system.

The diagnostic system included two phases: screening and diagnosis. In the phase of screening, [1] based on the records of each child, his/her health condition was surveyed for hearing, speech, and neurological disorders; if the child was normal, [2] a number of questions about age-related communication behaviors were asked from his/her parent/teacher, such as "does your child have any problem in following directions that are spoken to them or organizing their thoughts or producing their sentences or using tenses (past, present, future) properly?" If the answers to one or more questions were positive, the child failed the screening (23 children). So, he/she would be included in the diagnosis phase. In this phase, (1) the child's intelligent performance was assessed by using The human figure drawing; if his/her IQ>80, (2) the child's oral language performance was evaluated by using the TOLD; finally, If his/her listening and/or speaking quotients were -1.25 SD below the mean (EpiSLI system), SLI was diagnosed in him/her (6 children).

A number of descriptive statistics were calculated such

as rates, mean, and standard deviation. In addition, Chi-square test was used to analysis the correlation between the prevalence of SLI with sex and area in significant level of 0.05. The IBM SPSS 21 was used to analysis the data.

Results

Table 1 illustrates the demographic information of the 5-year-old Persian-speaking children.

This study estimated the prevalence of SLI in the 5-year-old Persian-speaking children to be 3.3% (table 2). Among these children, one of them had only receptive language disorder

(16.7%), while the others had only expressive language disorder (83.3%).

In addition, the estimated prevalence of SLI in boys and girls was 4.2% and 2.4%, respectively (table 3).

According to table 4, the estimated prevalence of SLI in the 5-year-old children who showed abnormal age-related communication behaviors was 26%.

Table 5 exhibits the estimated prevalence of other disabilities in the 5-year-old Persian-speaking children include stuttering (5%), phonological disorder (5.5%), stuttering+phonological disorder (0.5%), hearing loss (1.1%), and autism (1.1%). Additionally, the estimated prevalence of other disabilities in boys and girls according to the type of disorder has been reported in table 5.

According to table 6, there were no significant correlation between the estimated prevalence of SLI with sex and area (P>0.05).

Discussion

Although, Bishop stated that the comparison of

Table 1: The demographic information of the 5-year-old children

Group	N [†]	Sex				Min	Max	Age	
		Boys		Girls				Mean	SD [#]
		F*	P*	F	P				
5-year-old children	180	95	52.8%	85	47.2%	60	71	64.40	3.34

[†]Number; *Frequency; #Standard deviation

Table 2: The estimated prevalence of SLI and other disabilities in the 5-year-old children

Group	N [†]	Normal speech/Normal language		SLI		Other disabilities [#]	
		F*	P*	F	P	F	P
		5-year-old children	180	150	83.3%	6	3.3%

[†]Number; *Frequency; #Stuttering, Phonological disorder, Hearing loss, Autism

Table 3: The estimated prevalence of SLI and other disabilities in the 5-year-old children based on sex

Group	N [†]	Normal speech/Normal language		SLI		Other disabilities [#]	
		F*	P*	F	P	F	P
		Boys	95	73	76.8%	4	4.2%
Girls	85	77	90.6%	2	2.4%	6	7%

[†]Number; *Frequency; #Stuttering, Phonological disorder, Hearing loss, Autism

Table 4: The estimated prevalence of SLI in the 5-year-old children who showed abnormal age-related communication behaviors

Group	N [†]	SLI		Normal language	
		F*	P*	F	P
		No other disabilities+abnormal age-related communication behaviors	23	6	26%

[†]Number; *Frequency; #Stuttering, Phonological disorder, Hearing loss, Autism

Table 5: The estimated prevalence of other disabilities in the 5-year-old children based on sex and type of disorder

Group	N [†]	Stuttering		Phonological disorder		Stuttering + Phonological disorder		Hearing loss		Autism	
		F*	P*	F	P	F	P	F	P	F	P
		Total	180	9	5%	10	5.5%	1	0.5%	2	1.1%
Boys	95	6	6.3%	8	8.4%	-	-	2	2.1%	2	2.1%
Girls	85	3	3.5%	2	2.3%	1	1.2%	-	-	-	-

[†]Number; *Frequency; #Percent

Table 6: The correlation between the estimated prevalence of SLI with sex and area

Factors	SLI		
	X ^{2†}	df	P value
Sex	0.480	1	0.488
Area	6.21	8	0.624

[†]Chi-square

prevalence rates problematic because of the lack of an agreed set of criteria for language impairment [9], the estimation of this study about the prevalence of SLI in 5-year-old Persian-speaking children in Shiraz (3.3%) is similar to the findings of Mohammadi et al. who estimated the prevalence of SLI in 5-year-old Persian-speaking children in Semnan (3.4%) [12]. However, the main difference between these two studies was their diagnostic systems; Mohammadi et al. were used developmental questionnaire and analyzing speech samples obtained from picture description and conversation as the diagnostic tools without taking the children's intelligent performance into account. In contrast, our study was conducted by employing the EpiSLI system [2,7].

Our estimation is, however, in contrast with Tomblin et al.'s reported prevalence of 7.4% for English-speaking children [5]. But, our explanations of this difference include: (1) according to Tomblin et al., there is a variation in prevalence among children of different racial/cultural backgrounds; (2) we selected the samples just from the urban area of the city, but their population comprised urban, suburb, and rural areas of the state; and (3) our sampling was conducted on the children who enrolled at the preschools centers, whereas that was not an inclusion criteria in their study. Therefore, we estimated the prevalence of SLI in 5-year-old Persian-speaking children based on a more limited population comparing to Tomblin's study [2].

Our findings showed no significant difference in the prevalence of SLI between 5-year-old Persian-speaking boys (4.2%) and girls (2.4%). This estimation is associated with the findings of Tomblin et al. [7] and Mohammadi et al. [12].

In addition, there was no significant difference among the areas in aspect of the prevalence of SLI. It can be due to the inclusion criteria of enrolling at preschool centers; in other word, the children who enrolled at these settings are usually from some society categories.

On one hand, as mentioned earlier, the children with specific language impairment are at considerable risk for social, behavioral, emotional, and educational problems [14-16]; On the other hand, the estimates evidence nearly high prevalence of SLI in Persian-speaking preschool children. Consequently, it is necessary to diagnose these children in preschool ages in order to referral of them to speech and language therapy as soon as possible. The limitation of this study was the sampling which was limited to the children who enrolled in child care centers. It is suggested conducting the same studies in other cities in order to estimation the prevalence of SLI in Iranian population.

Conclusions

According to the findings of this study, 3.3% of the 5-year-old Persian speaking children living in urban areas of Shiraz and enrolling at the preschool centers have specific language impairment. So, it is important to employing a screening system to find these preschool children in order to prevention of the subsequent problems.

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Conflict of Interest: None declared.

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