

Delayed Speech in Children as a Symptom; Socio-Demographic Features and Accompanying Clinical Diagnosis

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Abstract

Delayed speech is a common clinical sign in children, and its prevalence has been determined to be 3–15%. The aim of this study was to review the clinical diagnosis of children with delayed speech who were referred to the pediatric psychiatry clinic and conduct a comparative study on the diagnostic groups in terms of their sociodemographic characteristics. The present study included 207 children at 18–60 months who had delayed speech. For each child, a sociodemographic data form and the Childhood Autism Rating Scale (CARS) were completed; moreover, the Ankara Developmental Screening Inventory (ADSI) was applied to evaluate his/her general developmental and cognitive levels. In the study, 52 children (25.1%) were female and 155 (74.9%) were male. 99 (47.8%) of them were diagnosed with Language Disorders, 65 (31.4%) with Cognitive Development Delays and 43 (20.8%) with Autism Spectrum Disorder. The incidence of perinatal complication history was determined at highest level in the Cognitive Development Delay group. The time used for electronic media was high in each diagnostic group, but highest in the autism group. When the number of languages used by the mothers is compared, the mothers in Language Disorder group use more than one language in daily life. Delayed speech is a sign that may be accompanying with several clinical diagnoses. Early diagnosis and educational support programs may contribute to healthy development of these children.

Keywords: delayed speech, language disorders, autism spectrum disorders, cognitive development delays

Öz

Bir Belirti Olarak Çocuklarda Konuşma Gecikmesi; Sosyodemografik Özellikleri ve Klinik Tanıları

Konuşma gecikmesi çocuklarda sıklıkla görülen bir klinik bulgudur ve literatürde prevalansı %3–15 olarak saptanmıştır. Bu çalışmada çocuk psikiyatri kliniğine başvuran ve konuşma gecikmesi olan çocukların klinik tanılarının gözden geçirilmesi ve tanı gruplarının sosyodemografik özellikleri açısından karşılaştırmalı olarak araştırılmasıdır. Çalışmaya konuşma gecikmesi olan 18–60 ay aralığındaki 207 çocuk alınmıştır. Çalışmaya alınan tüm çocuklar için sosyodemografik veri formu ve Çocukluk Otizm Değerlendirme Ölçeği (ÇODÖ) doldurulmuş, çocukların genel gelişimsel ve bilişsel düzeylerinin değerlendirilmesi için her çocuğa Ankara Gelişim Tarama Envanteri (AGTE) uygulanmıştır. Çalışmaya alınan çocukların 52'si (%25,1) kız, 155'i (%74,9) erkekti. Olguların 99'u (%47,8) Dil Bozukluğu (DB), 65'i (%31,4) Bilişsel Gelişimde Gecikme (BGG), 43'ü (%20,8) Otizm Spektrum Bozukluğu (OSB) tanılarını almıştır. Perinatal komplikasyon öyküsü Bilişsel Gelişimde Gecikmesi olan grupta en yüksek oranda saptanmıştır. Elektronik medya ile uğraş süresi her tanı grubunda yüksek olmakla birlikte, en yüksek OSB grubunda saptanmıştır. Annelerin kullandığı dil sayısı kıyaslandığında DB olan grupta annelerin birden fazla dili günlük yaşamda daha fazla kullandığı belirlenmiştir. Konuşma gecikmesi birçok klinik tanıya eşlik edebilen bir bulgudur. Bu nedenle konuşma gecikmesi olan çocuklar, bir çocuk psikiyatristi tarafından ayrıntılı olarak değerlendirilmelidir. Erken tanı ve eğitsel destek programları ile bu çocukların sağlıklı gelişimlerine katkı sağlanabilmektedir.

Anahtar Kelimeler: konuşma gecikmesi; dil bozukluğu; otizm spectrum bozukluğu; bilişsel gelişim gecikmesi

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INTRODUCTION

The acquisition of speaking skills is one of the most important tasks that must be fulfilled in the first years of life. In order for the speech to be realized, the receptive language must develop first. Children can usually distinguish their mother language from a foreign language before 6 months (Eimas, Siqueland, Jusczyk, & Vigorito, 1971; Polka, & Werker, 1994). The development of the expressive language starts in the second-third months of life with baby talk. Children babble at the age of 6 months and say their first words when they turn 1, and jargon words are observed intensively between 12–18 months. Children's vocabulary up to 2 years of age develops considerably, and they can produce approximately 50 words, can establish 2-word sentences, and most of their speech can be understood by others. At the age of 2–2.5 years, they can produce approximately 400 words and establish 2–3-word sentences. Children between the ages of 2.5–3 years can produce 3–5-word sentences, and a great part of their speech can be understood by others. At the age of 3–4 years, they can produce 3–6-word sentences, ask questions, and almost all of their speech can be understood by others. At the age of 4–5 years, they can speak with 6–8-word sentences (Toppelberg, & Shapiro, 2000; Topbas, 2000; Ciyiltepe, & Turkbay, 2004).

If a child cannot say any meaningful word although he/she has turned 18 months, cannot produce 2-word sentences at the age of 2 years, and cannot produce 3-word sentences or his/her speech cannot be understood at the age of 3 years, it is a widely accepted definition that he/she has “speech delay” (Ciyiltepe, & Turkbay, 2004; Yuce, 2012).

Speech delay is a relatively common childhood problem, and different studies around the world show that the pre-school prevalence is 3–15% (Billeaud, 1998; Law, Boyle, Harris, Harkness, & Nye, 2000; Frazer, & Knight, 2001). Speech delay is a symptom, not a diagnosis. Speech delay in children is mostly identified as a result of the consulting of families a clinician in line with their concerns or during routine controls. There are no universally agreed criteria to say that a child has a “speech delay”; therefore, the presence of this problem is mostly indicated by clinicians by considering the developmental characteristics of the child.

The presence of family history and male gender are considered to be important risk factors for speech delay. The studies conducted have emphasized that the presence of family history is an important predictor of speech delay

and it raises the risk by approximately 3 times (Zubrick, Taylor, Rice, & Slegers, 2007; Reilly et al. 2010; Bishop et al. 2012; Zambrana, Pons, Eadie, & Ystrom, 2014). In males, language and speech delay is approximately 3 times more common when compared to females (Huttenlocher, Haight, Bryk, Seltzer, & Lyons, 1991; Feldman et al., 2005). Furthermore, low birth weight and premature birth are emphasized as important risk factors in terms of language and speech delay. In children with the birth weight less than 85% of ideal birth weights or children born earlier than the 37th gestational week, the risk of language and speech delay is two-fold higher (Zubrick, Taylor, Rice, & Slegers, 2007). Moreover, psychosocial deprivation, bilingualism, and the gradually increasing use of electronic media (television, computer, etc.) are among the causes of language and speech delay (Vandewater, 2007; Byeon, & Hong, 2015).

While some children with speech delay in early childhood are able to overcome this problem in the pre-school period, others can experience speaking difficulties until the primary school years (Rescorla, 2011). It is known that children experiencing speech delay and/or difficulties in this period have more problems in the areas of learning and social communication in the future and have more risk in terms of their mental well-being when compared to children who successfully develop speech and communication skills (Snowling, Adams, Bishop, & Stothard, 2001; Clegg, Hollis, Mawhood, & Rutter, 2005; Snowling, Bishop, Stithard, Chipchase, & Kaplan, 2006).

Although language and speech delay may be a symptom of a genetic (Down syndrome, cleft palate, Fragile-X, etc.), auditory, neurological (cerebral palsy, etc.) or psychiatric (autism spectrum disorder, cognitive delay, etc.) disorder, it may occur without any cause. While language and speech delay due to the above-mentioned causes is called “secondary language and speech problems”, speech delay observed without any cause is called “primary language and speech problems” (Yuce, 2012; Kayiran, Şahin, & Cure; 2011).

Although the primary language and speech problems have been described with different terms (maturational language delay, expressive language delay, etc.) in the literature until today, the diagnosis of “Language Disorder” under the heading of Communication Disorders in DSM-V defines this problem and can meet the need for a common universal discourse. However, the fact that this diagnosis does not address receptive and expressive language problems separately suggests that this diagnosis may have a limitation.

In the light of this information, the aim of this study is to review the clinical diagnoses of children with speech delay applying to the Pediatric Psychiatry outpatient clinic between the ages of 18–60 months and to comparatively investigate the sociodemographic characteristics of diagnostic groups.

METHOD

Study Participants

207 children between the ages of 18–60 months applying to Pediatric Psychiatry outpatient clinic with speech delay (who cannot say any meaningful words despite being 18 months old, cannot produce 2-word sentences at the age of 2 years, and cannot establish 3-word sentences or cannot be understood at the age of 3 years), were included in the study. Written consent was obtained from the families accepting to participate in the study. The information obtained from the family and the findings of the examination were recorded separately for each patient in the sociodemographic data form created by the researchers. Furthermore, the Ankara Developmental Screening Inventory (ADSI) was applied to each patient to assess the general developmental and cognitive levels of children. The Childhood Autism Rating Scale (CARS) form was filled in to assess the autism symptoms and severity that may be present in all children included in the study.

The ethical approval for the study was obtained from the ethics committee of Diyarbakir Gazi Yaşargil Training and Research Hospital.

Data Collection Tools

Data Entry Form (Socio-demographic data entry form)

In the data form, information such as the child's date of birth, number of siblings, and total duration of using television/computer/phone per day is included. In relation to the family, information such as the mother languages of the mother and father, the number of languages they speak, their educational levels, their professional statuses and income levels, and parents' status of living together is included.

The Childhood Autism Rating Scale (CARS)

The CARS is a scale rating autism symptoms. The Turkish validity and reliability studies of the scale developed by Schoppler et al. (2007) were conducted, and the cutoff score of the Turkish form was found to be 30 (Sucuoglu,

Oktem, Akkok, 1996; Incekas, 2009). The CARS is widely used in the diagnosis of autism and in the distinction of these children from children with other developmental disorders. The scale is filled in based on the information obtained as a result of interviews with the family and observation of the child and consists of 15 items.

Ankara Developmental Screening Inventory (ADSI)

It is an inventory that systematically assesses the development and skills of infants and pre-school children in accordance with the information received from the caretaker. It is organized according to various age groups and as culturally specific. It consists of 154 items answered as "yes/no/do not know". As a result of the application, 5 different scores are obtained, namely the Language-Cognitive, Fine motor, Gross motor, and Social Skill-Self-care scores, which represent the Total Development Score and different but interrelated areas of development (Sezgin, Erol, & Savasir, 1993).

Statistical Analysis

The data obtained from the study were evaluated using IBM SPSS statistics software version 22. The variables obtained by measurement were expressed as mean \pm standard deviation, and categorical variables were expressed as percentage and number. Whether numerical variables exhibited a normal distribution was examined and determined by the Kolmogorov-Smirnov test and histograms. The comparison of the means between the three groups exhibiting normal distribution and having homogeneous variances from numerical variables was assessed by the variance analysis (ANOVA) and those not exhibiting a normal distribution were assessed by the Kruskal-Wallis variance analysis. Post-hoc tests were applied to find out from what the difference between the groups originated. Categorical variables were assessed by Pearson's chi-squared test and Fishers' s Exact test. In order to determine the direction and level of the relationship between the numerical variables, the Pearson correlation test was used for those exhibiting a normal distribution and Spearman correlation test was used for those not exhibiting a normal distribution. The $p < 0.05$ value was accepted as the statistical significance limit.

FINDINGS

A total of 207 children, 74.9% (n: 155) males, and 25.1% (n: 52) females were included in the study. The average age

of the children is 38 ± 10.2 months. As a result of the evaluation, 47.8% (n: 99) of the cases were diagnosed with Language Disorder (LD), 31.4% (n: 65) with Cognitive Development Delay (CDD), and 20.8% (n: 43) with Autism Spectrum Disorder (ASD). Gender ratios according to clinical diagnoses are presented in Table 1. There is no statistically significant difference between the diagnosis groups in terms of age and socioeconomic status ($p > 0.05$).

There was no statistically significant difference between the groups in terms of the family structure and parents' status of living together ($p > 0.05$). When the educational

level of the parents was evaluated, while a statistically significant difference was determined in the educational level of the father, no difference was observed between the educational levels of mothers (Table 2).

A statistically significant difference was determined between the groups in terms of the rates of experiencing any medical problems (hyperemesis, hypertension, etc.) during the pregnancy of mothers, the history of complications during the labor (prolonged labor, hypoxic birth, bleeding, etc.), the history of complications in the infant after birth, and premature birth history. When the groups were compared within themselves, it was determined that statistical significance originated from the CDD group, questioned peripartum complication and premature birth history were observed in this group at a high rate, and they were observed at the similar rate and lower rate in other two groups, and that there was no difference between the groups in term of the history of low birth weight (Table 3).

Table 1: Gender ratios in terms of diagnosis groups

	LD		CDD		ASD	
	N	%	N	%	N	%
Female	24	(%24.2)	21	(%32.3)	7	(%16.3)
Male	75	(%75.8)	44	(%67.7)	36	(%83.7)
Total	99	(%100)	65	(%100)	43	(%100)

Table 2: Educational level of the parents

	LD		CDD		ASD		P*
	N	%	N	%	N	%	
Mother's educational level							
iliterate/primary education	77	(%77.8)	58	(%89.2)	34	(%79.1)	0,159
high school and upper	22	(%22.2)	7	(%10.8)	9	(%20.9)	
Father's educational level							
iliterate/primary education	54	(%54.5)	47	(%72.3)	20	(%46.5)	0,016
high school and upper	45	(%45.5)	18	(%27.7)	23	(%53.5)	

* Chi-square test

Table 3: Comparison of peripartum complications, premature birth history and low birth weight

	LD		CDD		ASD		P*
	N	%	N	%	N	%	
Medical problems during pregnancy							
yes	9	%9.1	15	%23.1	2	%4.7	0.006
no	90	%90.9	50	%76.9	41	%95.3	
Complications during labor							
yes	3	%3	13	%20	0	%0	0.000
no	96	%97	52	%80	43	%100	
Complications in the infant after birth							
Var	1	%1	12	%18.5	0	%0	0.000
Yok	98	%99	53	%81.5	43	%100	
Premature birth							
yes	4	%4	11	%16.9	0	%0	0.001
no	95	%96	54	%83.1	43	%100	
Low birth weight							
yes	3	%3	1	%1.5	0	%0	0.81
no	96	%97	64	%98.5	43	%100	

*Chi-square test

While there was no statistically significant difference between the daily spoken languages of the mother and father between the groups, the most frequently spoken language by mothers and fathers in all groups was Kurdish. Among the participants, as the language spoken by mothers, Kurdish was determined at the rate of 67.6% (n: 140), Arabic at the rate of 21.7% (n: 45), Turkish at the rate of 10.1% (n: 21), and Syriac was determined at the rate of 0.5% (n: 1), and as the language spoken by fathers, Kurdish was determined at the rate of 69.6% (n: 144), Arabic at the rate of 22.7% (n: 47), and Turkish was determined at the rate of 7.7% (n: 16) ($p > 0.05$).

In this study, the groups were compared by applying ANOVA in terms of the number of languages spoken by mothers, the duration of using electronic media (TV, computer, tablet, smartphone, etc.) by children per day, duration of breastfeeding, and the number of siblings, and a statistically significant difference was determined (Table 4). When a paired comparison of the groups was performed by conducting the Post Hoc analysis, the difference in the number of languages spoken by mothers was determined to be due to the higher number of languages spoken by mothers in the group with LD. While the duration of using electronic media is high in all three groups, the statistical difference originates from the higher duration in the ASD group. It was determined that the difference in the duration of breastfeeding was due to the fact that it was lower in the group with CDD (Table 4).

When the groups were compared in terms of the number of siblings in the Post Hoc analyses, there was a statistically significant difference due to the highest number of siblings in the group with CDD. Furthermore, it was determined that there was a moderately statistically significant negative correlation between the number of siblings and the educational level of the father ($\rho = -.284$, $p < 0.001$).

In this study, a statistically significant difference was found between the groups in terms of the history of speech delay

ratios in the family (Chi-square test, $\chi^2: 6.657$; $p = 0.036$). The history of speech delay in the family was at the rate of 61.6% (n: 61) in the LD group, at the rate of 41.5% (n: 27) in the CDD group, and at the rate of 58.1% (n: 25) in the ASD group.

DISCUSSION

This study was conducted as cross-sectional among children who applied to the Child and Adolescent Psychiatry Clinic in Mardin. Speech delay may be a symptom of many developmental disorders such as ASD, CDD, and LD. In this study, perinatal histories, family and clinical characteristics of children who had applied to the clinic with speech delay were investigated.

Males constitute the majority of the cases in accordance with the literature information. It was determined in previous studies that male gender increases the risk of delay in the language development by 3 times. It was also found out in this study that the ratio of males was 3:1 in the LD group (Huttenlocher, Haight, Bryk, Seltzer, & Lyons, 1991; Feldman et al., 2005). In a cohort study conducted in Australia, it was determined that the gender ratio in mental retardation was in favour of the male dominance at the rate of 2:1 and a similar result was achieved in the present study (Little, Wallisch, Salley, & Jamison, 2016). In this study, the group with the highest number of males was the ASD (5:1) group. Studies conducted on ASD have emphasized that males are at a significant risk compared to females (Tanguay, & Lohr, 2016).

It was determined in the studies conducted that perinatal complications (asphyxia, hypoxia, etc.), premature birth, and low birth weight were risk factors in terms of cognitive delay in children (de Kleine, den Ouden, & Kollee, 2007; Petrini et al., 2009). Furthermore, it is known that these factors are present in the aetiology of children

Table 4: Comparison of number of languages spoken by the mothers, duration using electronic media, duration of breastfeeding and number of siblings

	LD Mean SD	CDD Mean SD	ASD Mean SD	P*	Tukey
Number of languages spoken by the mothers	1.94 ± 0.47	1.69 ± 0.56	1.7 ± 0.59	0.004	LD>CDD=ASD
Duration of using electronic media (hour/day)	3.92 ± 3.06	2.81 ± 2.71	4.72 ± 3.79	0.006	ASD>LD=CDD
Duration of breastfeeding (month)	14.5 ± 8.8	10.05 ± 9.4	13.09 ± 9.1	0.009	LD=ASD>CDD
Number of siblings	2.99 ± 1.53	3.75 ± 2.03	3.16 ± 1.97	0.028	CDD>LD=ASD

*One-way Anova

with language disorder (Zubrick, Taylor, Rice, & Slegers, 2007). According to the results of this study, a significant difference was found between the diagnosis groups when these factors were compared. Among these factors, perinatal complications and premature birth rates were found to be higher in the group with cognitive delay and the history of low birth weight was found to be at a higher rate in the group with language disorders.

Mardin is a city with many cultures and languages due to its socio-cultural structure. Turkish, Kurdish, Arabic, and Syriac are the most frequently spoken languages. When the groups were compared in terms of the mother languages, no difference was found. The most frequently spoken languages were determined to be Kurdish and Arabic. However, a significant difference was found when the number of languages spoken by mothers was compared between the groups, and this difference originates from the higher number of languages spoken by mothers in the group with language disorders. This finding supports the literature information that bilingualism can pose a risk in terms of speech delay (Vandewater et al. 2007).

The duration of using electronic media was determined to be high in all three groups, but it was found out to be the highest in the ASD group. As the duration of using electronic media (watching television and using atablet, computer, and smartphone) increases, the daily motor activity time, playing games and communicating with friends of children decrease. Therefore, retardation in motor and cognitive skills, limitation in social communication, and delay in speaking skills can be observed (Anderson, & Pempek, 2005; Chonchaiya, & Pruksananonda, 2008; Mistry, Minkovitz, Strobino, & Borzekowski, 2007; Pagani, Fitzpatrick, Barnett, & Dubow, 2010; Byeon, & Hong, 2015). The increase in the duration of using electronic media at early ages suggests that it may be a significant risk factor for speech delay.

The importance of breast milk has been emphasized in many medical areas for both mother and infant health and has been proven in the literature with many studies. Studies have proven that infants optimally fed with breastmilk exhibit a better neurobiological development than infants fed with formula (Anderson, Johnstone, & Remley, 1999). It has been stated in some studies that the short duration of breastfeeding increases the risk of ASD (Al-Farsi et al. 2012). In this study, the longest duration of breastfeeding was also determined in the group with LD, and it was determined that there was a history of a

shorter duration of breastfeeding in children in the ASD and CDD groups and a statistically significant difference was determined between the groups. The fact that there is a history of a shorter duration of breastfeeding in the ASD and CDD groups supports the knowledge that breast milk is very important for the neurobiological development.

It was determined that the number of siblings was statistically significantly different between the groups and it was the highest in the CDD group. It was also determined that the educational level of fathers in the CDD group was lower and that there was a moderately significant negative correlation between the educational level of fathers and the number of siblings and that the number of children in the family increases as the educational level of the father decreases. When the Southeastern Anatolia Region is examined in socio-cultural terms, it is a region where the feudal family and social structure is predominant, male dominance is common, and the number of children is higher compared to the other regions. It is observed that as the educational level of males increases, the concept of modern society becomes more evident, the economic welfare increases, and the traditional repressive family and social rules become weaker. It is known that socioeconomic insufficiencies affect all stages of the life of an individual starting from the intrauterine period. The level of this effect may depend on factors such as stress, nutrition, parental care, and cognitive stimuli. All these factors affect the brain structure, executive functions, memory, and language skills (Larson, 2007; Weisman et al., 2011; Jednorog et al., 2012). In the light of all this information, it is known that socioeconomic insufficiencies and low parental education level pose a risk for CDD and the findings of this study support this literature information.

When the family history was questioned in terms of speech delay, it was determined to be high in all three groups, especially with the LD group being in the lead. The studies conducted have detected that the family history increases the risk by three times and is an important predictor. In this study, the presence of family history in terms of speech delay, regardless of the diagnosis, was found to be at a high rate, which supports the literature knowledge (10–13).

The limitations of this study should also be considered when evaluating the findings. The study sample consisted only of cases who applied to the clinic, and cases with speech delay who did not apply to the clinic were not included. There may be differences in the investigated characteristics of cases who did not apply to the clinic.

Moreover, it was observed that some findings were difficult for families to remember because they were asked retrospectively. For example, while peripartum complications in mothers and infants were investigated, the presence of a limited number of documents in families limited the access to medical information.

As a conclusion, speech delay should be addressed as a symptom, especially in the early period, rather than a clinical diagnosis, and it is a condition that must be thoroughly evaluated by a pediatric psychiatrist. The importance of this study is the fact that it addresses speech delay as a symptom, and therefore, creates a holistic approach to the subject. Furthermore, this study is also important because it is aimed at understanding speech delay in the Southeastern Anatolia Region of Turkey, where many cultures, ethnic origins, and languages coexist, and at defining its characteristics in this region. Thus, addressing and evaluating speech delay within the mentioned characteristics can ensure early diagnosis and lay the groundwork for the establishment of appropriate treatment and intervention programs.

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