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ARAŞTIRMA / RESEARCH

Diagnosis and clinical characteristics of children with speech delay

Konuşma gecikmesi olan çocukların tanıları ve klinik özellikleri

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Abstract

Purpose: This study aimed to determine the diagnoses, sociodemographic and clinical features of patients who applied to the child psychiatry outpatient clinic with speech delay, and to determine the relationship between these features and psychiatric diagnoses.

Materials and Methods: The data from 152 patients presented with speech delay were retrospectively analyzed. Demographic and clinical characteristics of the participants including; birth history, comorbidities, caregiver information, bilingualism, screen exposure, family history of speech delay, parental psychopathology and psychiatric diagnoses were examined.

Results: Of the 152 participants 78.9% (n=120) were boys and the mean age was 34.6±8.2 months. The rate of being exposed to the screen (more than one hour) was 55.9%, the presence of a family history of speech delay was 36.2%, and the presence of psychopathology was 28.9%. Of the children with speech delay, 36.2% were diagnosed with autism spectrum disorder (ASD), 27.0% with stimulus deficiency (SD), 20.4% with cognitive developmental delay (CDD) and 16.4% with language disorder (LD). Family history of speech delay was found to be higher in the groups diagnosed with ASD and SD. Chronic medical disease was higher in CDD and ASD groups and screen exposure was higher in the SD group compared to the other groups.

Conclusion: This study is important in terms of knowing the psychiatric diagnoses and rates of children with speech delay, determining the factors that may affect this condition, and taking preventive measures in the early period.

Keywords:. Speech delay, infant mental health, child psychiatry, preschool.

Öz

Amaç: Bu çalışmada konuşma gecikmesi ile çocuk psikiyatri polikliniğine başvuran hastaların aldıkları tanıların, sosyodemografik ve klinik özelliklerin ve bu özelliklerin psikiyatrik tanılarla ilişkisinin belirlenmesi amaçlanmıştır.

Gereç ve Yöntem: Konuşma gecikmesi ile başvuran 152 hastanın verileri geriye dönük olarak analiz edilmiş, katılımcıların demografik ve klinik özellikleri; doğum öyküsü, komorbiditeler, bakımveren bilgileri, iki dillilik, ekrana maruz kalma, ailede konuşma gecikmesi öyküsü ve ebeveyn psikopatolojisi ve aldıkları psikiyatrik tanılar incelenmiştir.

Bulgular: 152 katılımcının 120'si erkek (%78.9) cinsiyette idi ve katılımcıların yaş ortalaması 34.6±8.2 aydı. Konuşma gecikmesi ile başvuran hastalarda günde bir saatten fazla ekrana maruz kalma oranı % 55.9, ailede konuşma gecikmesi öyküsü olması % 36.2, ebeveynde psikopatoloji varlığı % 28.9 saptanmıştır. Konuşma gecikmesi olan çocukların % 36.2'si Otizm Spektrum Bozukluğu (OSB), % 27.0'ı uyaran eksikliği, % 20.4'ü Bilişsel Gelişimde Gecikme (BGG), % 16.4'ü ise Dil Bozukluğu (DB) tanısı almıştır. Ailede konuşma gecikme öyküsü, OSB ve uyaran eksikliği gruplarında diğerlerine oranla daha yüksek bulunmuştur. Kronik tıbbi hastalığın varlığı BGG ve OSB grubunda daha yüksek bulunmuştur. Ekran maruziyeti ise uyaran eksikliği grubunda diğer gruplara oranla daha yüksek saptanmıştır.

Sonuç: Bu çalışma, konuşma gecikmesi olan çocukların psikiyatrik tanılarının ve oranlarının bilinmesi, bu duruma etki edebilecek faktörlerin belirlenmesi ve erken dönemde önleyici tedbirlerin alınması açısından önemlidir.

Anahtar kelimeler: Konuşma gecikmesi;,bebek ruh sağlığı, çocuk psikiyatri, okul öncesi.

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INTRODUCTION

Speech delay is defined as the child's failure to show the language development expected at the chronological age and is relatively a common problem with an estimated prevalence of 5-12% in children aged 2-5 years[1]. This problem may be a clinical reflection of a genetic, auditory, neurological or a psychiatric disorder. In child psychiatry clinics, this is a common symptom in neurodevelopmental disorders such as autism spectrum disorder (ASD), cognitive developmental delay (CDD), language disorder (LD) and stimulus deficiency (SD).

The factors that play a role in the etiology of speech delay have not yet been fully determined, but some risk factors have been found to play a role in the etiology of this condition[2,3]. It is known that the first of the important risk factors is gender, reported approximately three times more common in boys than in girls[3, 4]. The presence of individuals with speech delay in the family also doubles this risk[5]. Another risk factor is screen exposure. The increase in the time spent in front of the screen causes a decrease in stimuli (movement, sense, taste, sounds, shapes, visuals, social environments, time spent with parents, games) and negatively affects the development of speech[6]. It has been shown that children who grow up in an electronic environment where technologies such as television, computer and internet are intensified, starting to speak later occurs due to the decrease in communication both with their peers and within the family[7].

Situations such as the child's chronic illness and prolonged hospitalization may delay the child's speech as they will restrict his/her communication. It has been previously reported that children without health problems are more willing to communicate and this has an accelerating effect on language development[8]. Also, mixing of two languages can be observed in children living in families where two different languages are spoken, and this bilingualism may play a role in speech delay[9].

There are few studies on the conditions in which speech delay occurs in children, clinical symptoms, and patients presenting to mental health units with speech delay. In a two-year follow-up study conducted with 59 children diagnosed with speech delay, it was observed that 57.6% of the participants had insufficient stimulus and 61.0% had intense screen (TV, tablet, mobile phone) exposure. In the evaluation made 2 years later, 18.6% of the participants were diagnosed with ASD, 20.3% with CDD, and 18.6% with communication disorder in the same study[2].

Based on these informations, it is possible to deduce that speech delay may often be a symptom of different psychiatric and medical or social conditions rather than a diagnosis. So, determining the diagnostic distribution and related factors by detecting speech delay in children provides the basic data for determining the areas that require preventive measures and treatment services. Thus, it will be possible to provide follow-up and treatment of children with speech delay, to provide appropriate psychoeducation and support to families, to identify children at risk more easily, and to direct patients in need of therapy and educational support.

In this study, it was aimed to determine the demographic and clinical characteristics of children who applied to the child psychiatry infant mental health unit of a university hospital with the complaint of speech delay, the psychiatric diagnoses they received after DSM-5-based psychiatric interview and parent-child play observation, and possible factors related to speech delay.

MATERIALS AND METHODS

Participants

This research was conducted in İnönü University Child and Adolescent Psychiatry Clinic. Our clinic consists of the polyclinic unit where patient and family interviews are conducted, and the infant mental health unit where children aged 0-6 years are evaluated in detail. In routine evaluation, children between the ages of 0-6 who are first evaluated in the outpatient clinic are then directed to the infant mental health unit for a detailed evaluation. The study protocol was approved by the İnönü University Health Sciences Non-Invasive Clinical Research Ethics Committee (2021/1738).

In this study, the files of the patients who applied to our child psychiatry department outpatient clinics and referred to the infant mental health unit for a differential diagnosis due to speech delay between September 2019 and January 2020 were examined retrospectively. The files of 174 patients aged 1-6 years whose hearing and neurological examinations were performed before and did not have a speech impediment were accessed, and 22 patients who were

found to have incomplete information were excluded from the study.

In total data of 152 patients were analyzed that was recorded in the files as; sociodemographic and clinical characteristics, difficult birth history (not crying at birth, bruising, vacuum/forceps use, need for oxygen support), chronic medical disease (this information was determined by examining health records.), caregiver, bilingualism, screen exposure (more than one hour a day), family history of speech delay and psychopathologies (this information was recorded with the history taken from the parents.).

Psychiatric evaluation

The psychiatric examination and evaluation of the psychometric test results of the patients who were referred to the infant mental health outpatient clinic for detailed evaluation were performed by a child and adolescent psychiatrist and the data were recorded.

Psychiatric diagnoses of the child as a result of observation of play with his parents in the mirrored room and DSM-5-based examination were evaluated. Stimulus Deficiency, which is not included in the DSM-5, is defined clinically (such as lack of environmental stimuli, emotional neglect, and intense screen exposure history).

The game observation includes the following steps: Mothers were instructed to play with their children as they usually did at home. The children and their mothers who participated in the study were observed playing in a laboratory playroom with toys for 10 min. After free play, Next, the mothers were instructed to teach the children two predesigned tasks. In the next episode, the mothers left the children alone in the room and stayed outside the door for 3 min. Then, the mothers re-entered the playroom while calling their children's names. At least two examiners observed the play from outside the room behind a one-way mirror.

Statistical analysis

The data were evaluated with the SPSS 21.0 (Statistical Package for the Social Sciences) computer program. Number, percentage, median, min-max values were used as complementary statistics. Whether the numerical data showed normal distribution was tested with the Kolmogorov-Smirnov test. As a result of the evaluations, numerical data (age, number of siblings) were showed normal distribution, and Anova was used to evaluate these data. Chi-square analysis was performed in the evaluation of categorical variables (sex, parents, caregiver, bilingualism, family history of delay in speech, chronic medical disease, screen exposure, parental psychopathology, difficult birth, kinship between parents) and Cramer V statistics were used to determine whether there was a difference between the groups.

RESULTS

Of the 152 participants 120 (79%) were boys and the mean age was 34.6±8.2 months (min-max=19-55 months). Of the children with speech delay, 36.2% were diagnosed with ASD (n=55), 27.0% with SD (n=41), 20.4% with CDD (n=31) and 16.4% (n=25) with LD.

The rate of screen exposure for more than one hour a day was found as 55.9% (and a family history of speech delay was 36.2%, a difficult birth was 30.3%, a parent's psychopathology was 29% a chronic medical disease was 26.5%, and bilingualism was 13.8%. Demographic characteristics of the participants and their families are given in Table 1.

When the participants were compared in terms of the diagnoses of ASD, SD, CDD, and LD, the groups were found to be similar in terms of age (p=0.189) and number of siblings (p=0.155). When the groups were compared in terms of gender (p=0.124) and difficult birth history (p=0.187), they were found to be similar.

Again, when familial characteristics were evaluated, no significant difference was found between the groups in terms of parental association (together or divorced, p=0.360), caregiver (p=0.228), bilingualism (p=0.743), psychopathology in the family (p=0.491), consanguinity between parents (p=0.168). Family history of speech delay was found to be higher in the ASD and SD groups compared to the others (p=0.025).

Presence of chronic medical disease was higher in the CDD and ASD groups (p=0.000). Screen exposure was found to be significantly higher in the stimulus deficiency group (p=0.000). The demographic and clinical characteristics of the diagnoses of the participants are given in Table 2.

Table 1. Sociodemographic characteristics of participants and families

Characteristics		**n= 152**	**%**
Sex	Girl	32	21.1
	Boy	120	78.9
Parents	Together	135	88.8
	Divorced	17	11.2
Caregiver	Mother	113	74.3
	Another	39	25.7
Bilingualism	Yes	21	13.8
	No	131	86.2
Family History of Delay in Speech	Yes	55	36.2
	No	97	63.8
Chronic Medical Disease[a]	Yes	40	26.5
	No	112	73.5
Screen Exposure (more than one hour)	Yes	85	55.9
	No	67	44.1
Parental Psychopathology	Yes	44	28.9
	No	108	71.1
Difficult Birth	Yes	46	30.3
	No	106	69.7
Kinship between parents	Yes	33	21.7
	No	119	78.3

a: Chronic medical diseases include; skin disease (n = 8), asthma (n = 8), gastrointestinal system disease (n = 7), growth retardation (n = 4), thyroid disease (n = 3), diabet (n = 2), and others (n = 8).

Table 2. Comparison of the participants' features with psychiatric diagnoses

		ASD (n=55) Mean ± SD	**SD (n=41) Mean ± SD**	**CDD (n=31) Mean ± SD**	**LD (n=25) Mean ± SD**	**F or X^2**	**p***
Age (month)		36.22 ± 8.83	32.68 ± 8.02	33.90 ± 7.45	35.32 ± 7.66	1.611	0.189
Number of siblings		1.22 ± 1.19	1.22 ± 1.01	1.61 ± 1.17	0.96 ± 0.79	5.242	0.155
		n (%)	**n (%)**	**n (%)**	**n (%)**	**X^2**	**p****
Sex	Girl	9 (16.4)	6 (14.6)	11 (35.5)	6 (24.0)	5.759	0.124
	Boy	46 (83.6)	35 (85.4)	20 (64.5)	19 (76.0)		
Parents	Together	46 (83.6)	39 (95.1)	28 (90.3)	22 (88.0)	3.214	0.360
	Divorced	9 (16.4)	2 (4.9)	3 (9.7)	3 (12.0)		
Caregiver	Mother	41 (74.5)	29 (70.7)	27 (87.1)	16 (64.0)	4.327	0.228
	Another	14 (25.5)	12 (29.3)	4 (12.9)	9 (36.0)		
Bilingualism	Yes	9 (16.4)	5 (12.2)	5 (16.1)	2 (8.0)	1.240	0.743
	No	46 (83.6)	36 (87.8)	26 (83.9)	23 (92.0)		
Family History of Delay in Speech	Yes	22 (40.0)[a]	18 (43.9)[b]	4 (12.9)[a, b]	11 (44.0)[a, b]	9.342	**0.025**
	No	33 (60.0)	23 (56.1)	27 (87.1)	14 (56.0)		
Chronic Medical Disease	Yes	22 (40.7)[b]	1 (2.4)[a]	16 (51.6)[b]	1 (4.0)[a]	34.352	**<0.001**
	No	32 (59.3)	40 (97.6)	15 (48.4)	24 (96.0)		
Screen Exposure (more than one hour)	Yes	27 (49.1)[b]	34 (82.9)[a]	11 (35.5)[b]	13 (52.0)[b]	18.581	**<0.001**
	No	28 (50.9)	7 (17.1)	20 (64.5)	12 (48.0)		
Parental Psychopathology	Yes	18 (32.7)	10 (24.4)	11 (35.5)	5 (20.0)	2.413	0.491
	No	37 (67.3)	31 (75.6)	20 (64.5)	20 (80.0)		
Difficult Birth	Yes	18 (32.7)	11 (26.8)	13 (41.9)	4 (16.0)	4.798	0.187
	No	37 (67.3)	30 (73.2)	18 (58.1)	21 (84.0)		
Kinship Between Parents	Yes	11 (20.0)	8 (19,5)	11 (35.5)	3 (12.0)	5.058	0.168
	No	44 (80.0)	33 (80.5)	20 (64.5)	22 (88.0)		

ASD: Autism Spectrum Disorder, SD: Stimulus Deficiency, CDD: Cognitive Developmental Delay, LD: Language Disorder. p*: p value of Anova, p**: p value of chi-square test. a and b show the difference between groups.

DISCUSSION

In this study, it was aimed to determine the demographic and clinical characteristics of children who applied to the child psychiatry infant mental health unit with the complaint of speech delay, the diagnoses they received after the psychiatric examination and the possible factors related to these diagnoses. Of the children evaluated in the study, 36.2% were diagnosed with ASD, 27.0% with SD, 20.4% with CDD, and 16.4% with LD. Family history of speech delay was found to be significantly higher in ASD and stimulus deficiency groups. Presence of chronic medical disease was found to be significantly higher in the CDD and ASD groups. Screen exposure was found to be significantly higher in the stimulus deficiency group than in the other groups.

Although speech delay is one of the most common reasons for admission in child psychiatry in preschool period, information about this age group is limited. Many studies have shown that male gender is important in the etiology of speech delay[10,11]. The male/female ratio is higher in clinical-based studies (2/1-6/1) than in population-based studies (1.3/1)[2]. The fact that the boy/girl ratio in our study which is approximately 4/1 is consistent with the literature data. This may be related to delayed central nervous system maturation in boys, as well as the fact that boys have a higher developmental risk than girls, and psychiatric problems are more common in boys[12].

It is known that the cognitive, language and motor development of children is shaped by the physical and emotional relationship that they establish with their parents[13]. The high rate of psychopathology in the family may cause psychopathology in the child by interacting with environmental factors together with genetic load. These effects may lead to deterioration in the child's social, emotional, cognitive and language development skills. Weindrich et al. reported that parental mental health indicators such as: The low educational level of the parents, crowded living conditions, parental psychiatric disorders, parental delinquency or broken home history, marital discord, early parenthood, single- parent family, unwanted pregnancy, lack of social support, severe chronic difficulties and poor coping skills of a parent was a risk factor for speech, language, reading, and spelling in children aged 54 and 96 months[14].

Although the rate was found to be 17.2% in a study investigating the prevalence of mental illness in adults in our country, this rate was found to be 29% in parents in our study[15]. This high rate brings up the issue that the current psychopathology may lead to situations such as insensitivity to the child's clues and emotional neglect. This can affect the quality of care and parenting skills, creating changes that predispose to speech problems.

The relationship between difficult birth/asphyxia and language delay has been shown in previous studies[16,17]. The high rate of difficult birth history as 30.2% of our study supports the literature in this respect. However, finding similar history of difficult birth between the groups may be related to the exclusion of those with neurological diseases from this study.

In this study, bilingualism was found in 13.2% of the participants and no significant difference was found between the groups. Although bilingualism is thought to be more advantageous in terms of flexibility than mono lingualism, mixing of two languages can be observed in these children, and this may play a role in speech delay. However, there are also opinions that argue that bilingualism generally does not pose a problem if there is no difficulty in the primary language[7].

Stimulus deficiency is described as decreased effects of normal environmental factors on a child's life and failure to get directly external stimuli and to be fed with sufficient external stimuli[18]. Long-term screen exposure and stimulus deficiency are another conditions that has increased in recent years and negatively affects the development of speech. Longer use of the screen in the preschool period, which is one of the most critical stages of childhood, increases the risk of encountering developmental delays such as, cognitive, social, communication-language skills in the following years.

In a study from our country evaluating 317 patients aged 0-5 years who applied to the child psychiatry outpatient clinic in our country, "Stimulus Deficiency" was the most common diagnosis with a percentage of 14.5%[11].

In a study conducted by Duch et al. in 119 infants, the average screen exposure time of children was found as 3.29 hours and the communication score was found to be lower in infants who spent more than 2 hours in front of the television. This was related to the fact that as the time spent in front of the screen increases, the amount of stimulus decreases (face-to-face interaction and

communication, time spent with the family, peer communication, playing time, etc.), thus negatively affecting the development of speech[19].

AAP (American Academy of Pediatrics) recommends that screen use under the age of two should be avoided, and if screens between the ages of 2 and 5 are to be watched, it should be limited to one hour a day with quality programs[20].

In our study, 41 patients (27%) were diagnosed with SD. In all of the participants, exposure to the screen for more than one hour was determined at a high rate of 56%, and it was found to be significantly higher in the SD group compared to the other groups. Considering that the average age of the participants was 34 months, the increased screen exposure of these cases is a concern for child psychiatrists.

Considering the possible risk factors for language development, 20% of the children have a family history of delayed speech[2,21]. Although the family history of speech delay is most frequently blamed, it may also be associated with conditions such as ASD and CDD that might have caused the speech delay[22].

In our study, there was no difference in family history in the CD and CDD groups, but it was higher in the ASD and stimulant deficiency groups. The fact that speech delay was found to be high in the family in the ASD group supports the concept of broad phenotype, which is frequently accused in ASD. The Concept of Extended Phenotype in ASD describes a condition characterized by impairments in cognitive, social, communicative, behavioral and personality areas in close relatives of autistic individuals. Indeed, some evidence of early language problems in siblings and adult relatives of individuals with ASD has previously been reported[23].

In this study, the presence of a chronic medical disease was found to be higher in the CDD and ASD groups. It has been previously shown that these two disorders, which are included in the DSM-5 title of neurodevelopmental disorders, are associated with many medical diseases, especially epileptyform anomalies, chromosomal anomalies (such as Fragil-X, PraderWili-Angelman, Down), vision-hearing problems[24,25,26]. Although those with neurological diagnoses and hearing problems were excluded in this study, the finding of higher rate of chronic disease in these groups supports the literature.

Like any study, this study has some strengths and limitations. The large number of samples, the diagnosis of all children after detailed evaluation such as with parent-child play observation, and the fact that patients with neurological and hearing problems were not included in the study are the strengths of this study. However, the fact that mental retardation could not be excluded in the ASD group, the files were reviewed retrospectively, and the data belonged to a single center can be counted among the limitations of this study. In addition, the lack of use of developmental assessment tools based on objective measurements, the presence of psychopathology in the family and the determination of difficult birth history based on anamnesis are the other limitations of the study.

In the current study showed that family history of speech delay in ASD and SD, presence of chronic medical disease in BDD and ASD group; screen exposure in the SD was found to be significantly higher than the other groups. Considering the limited number of studies conducted with infants and children in the literature, it is important to know the distribution and prevalence of children presenting with speech delay, to identify and define the factors that may affect the situation in terms of identifying risky children. Thus, it will be easier to provide follow-up and treatment of these children, to provide appropriate psychoeducation and support to families, to identify children at risk and to direct patients in need for therapy and educational support.

Yazar Katkıları: Çalışma konsepti/Tasarımı: AÇD, ÖÖ; Veri toplama: ÖÖ; Veri analizi ve yorumlama: AÇD; Yazı taslağı: AÇD; İçeriğin eleştirel incelenmesi: ÖÖ; Son onay ve sorumluluk: AÇD, ÖÖ; Teknik ve malzeme desteği: AÇD; Süpervizyon: AÇD; Fon sağlama (mevcut ise): yok.
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REFERENCES

1. Wallace IF, Berkman ND, Watson LR, Coyne-Beasley T, Wood CT, Cullen K et al. Screening for speech and

language delay in children 5 years old and younger: a systematic review. Pediatrics. 2015;136:e448-62.
2. Başay BK, Tezer D. Üç yaş öncesi konuşma gecikmesi nedeniyle çocuk psikiyatri polikliniklerine başvuran çocuklara ne oldu? 2 yıl sonrasına ait veriler. Pamukkale Tıp Dergisi. 2020;13:373-84.
3. Boyle J. Speech and language delays in preschool children. BMJ. 2011;343:d5181.
4. Huttenlocher J, Haight W, Bryk A, Seltzer M, Lyons T. Early vocabulary growth: Relation to language input and gender. Dev Psychol.1991;27:236–48.
5. Feldman HM, Dale PS, Campbell TF, Colborn DK, Kurs-Lasky M, Rockette HE. Concurrent and predictive validity of parent reports of child language at ages 2 and 3 years. Child Dev. 2005;76:856-68.
6. Kayiran SM, Soyak G, Gürakan B. Electronic media use by children in families of high socioeconomic level and familial factors. Turk J Pediatr. 2010;52:491-9.
7. McLaughlin MR. Speech and language delay in children. Am Fam Physician. 2011;83:183-8.
8. Serdaroğlu A, Cansu A, Ozkan S, Tezcan S. Prevalence of cerebral palsy in Turkish children between the ages of 2 and 16 years. Dev Med Child Neurol. 2006;48:413-6.
9. Fox AV, Dodd B, Howard D. Risk factors for speech disorders in children. Int J Lang Commun Disord. 2002;37:117–32.
10. Zubrick SR, Taylor CL, Rice ML, Slegers DW. Late language emergence at 24 months: An epidemiological study of prevalence, predictors, and covariates. J Speech Lang Hear Res. 2007;50:1562–92.
11. McLeod S, Harrison LJ. Epidemiology of speech and language impairment in a nationally representative sample of 4-to 5-year-old children. J Speech Lang Hear Res. 2009;52:1213-29
12. Sevgen FH, Altun H. Çocuk ve ergen psikiyatrisi polikliniğine başvuran 0-5 yaş arası çocukların başvuru şikayetleri ve psikiyatrik tanıları. Journal of Mood Disorders. 2017;7:205–11.
13. Keskindemirci G, Gokcay G. Dil gelişimi gecikmiş olan çocuklarda ekran maruziyeti: ön çalişma sonuçları. Journal of Istanbul Faculty of Medicine. 2020;82:29-30.
14. Weindrich D, Jennen-Steinmetz C, Laucht M, Esser G, Schmidt MH. Epidemiology and prognosis of specific disorders of language and scholastic skills. Eur Child Adolesc Psychiatry. 2000;9:186–94.
15. Kılıç C. Türkiye'de ruhsal hastalıkların yaygınlığı ve ruhsal tedavi ihtiyacı konusunda neredeyiz? Toplum ve Hekim Dergisi 2020;35:179-87.
16. Stanton-Chapman TL, Chapman DA, Bainbridge NL, Scott KG. Identification of early risk factors for language impairment. Res Dev Disabil. 2002;23:390–405.
17. Sunderajan T, Kanhere SV. Speech and language delay in children: Prevalence and risk factors. J Family Med Prim Care. 2019;8:1642–46.
18. Uzun Cıcek A, Sarı SA, Mercan Isık C. Sociodemographic characteristics, risk factors, and prevalence of comorbidity among children and adolescents with intellectual disability: a cross-sectional study. J Ment Health Res Intellect Disabil. 2020;13:66-85.
19. Duch H, Fisher EM, Ensari I, Font M, Harrington A, Taromino C et al. Association of screen time use and language development in Hispanic toddlers: a cross-sectional and longitudinal study. Clin Pediatr (Phila). 2013;52:857-65.
20. AAP. Announces new recommendations for children's media use. 21.10.2016 Available from: URL: https://www. aap.org/en-us/about-the-aap/aap-press-room/pages/ american-academy-of-pediatrics-announces- newrecommendations- for-childrens- media-use.aspx. Accessed at 03.06.2021.
21. Çiçek AU, Akdag E, Erdivanli OC. Sociodemographic characteristics associated with speech and language delay and disorders. J Nerv Ment Dis. 2020;208:143-6.
22. Harrison LJ, McLeod S. Risk and protective factors associated with speech and language impairment in a nationally representative sample of 4-to 5-year-old children. J Speech Lang Hear Res. 2010;53:508-29.
23. Küçük Ö, Ulaş G, Yaylacı F, Miral S. Geniş otizm fenotipi. Psikiyatride Güncel Yaklaşımlar. 2018;10:228-48.
24. Tuchman R. Autism and social cognition in epilepsy: implications for comprehensive epilepsy care. Curr Opin Neurol. 2013;26:214-8.
25. Sevketoglu T, Kilincaslan A, Mukaddes MN. Autistic spectrum disorders in individuals with severe hearing impairment. Eur Child Adolesc Psychiatry. 2011;20:148-9.
26. Oeseburg B, Dijkstra GJ, Groothoff JW, Reijneveld SA, Jansen DE. Prevalence of chronic health conditions in children with intellectual disability: a systematic literature review. Intellect Dev Disabil. 2011;49:59-85.