Original Article

Factors Associated with Delayed Language Development in 18 Months to 3-Years-Old Children in Naresuan University Hospital

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Objective: To identify factors associated with the delaying of language development in 18 months to 3-years-old children in Naresuan University Hospital.

Materials and Methods: The case-control study included 30 delayed language development and 30 normal development children at 18 months to three years of age. Characteristics of children, mother, father, and caregiver were interviewed. Daily activities of children were reviewed. The data were analyzed by Chi-squere test.

Results: Twenty-three boys and seven girls were included in both study case and control groups. Mean age (±SD) were 2.0±0.5, 2.0±0.4 years in case group and control group, respectively. Mothers of children who had delayed language usually had a bachelor's degree or higher. These children spent time to play alone more than one hour per day and spent time to watch TV or other media for more than two hours per day.

Conclusion: Factors association for delayed language development in 18 months to 3-years-old children in Naresuan University Hospital were high education mother, children that spend time to play alone for more than one hour per day, and children that watched TV or other media for more than two hours per day.

Keywords: Delayed language development, Risk factors, Children

J Med Assoc Thai 2019;102(1):95-9
Website: http://www.jmatonline.com

Regardless of nationalities and language, the children can develop language skills in the same period of life. In general, language skills consist of receptive (hearing and understand) and expressive (talking) abilities. Language development is usually fairly predictable pattern and pararells to intellectual development[1].

Delayed language development in preschool children is the most common developmental problem. Prevalence of delayed language development was increased between 5% to 6% and 11.68% to 12.6% in the year 1998 to 2016[2-6]. Delayed language development in children is usually associated with poor outcome in academic achievement, low socialization, and emotional problems[7-9]. Delayed language development should exclude hearing impairment, mental retardation, and autism. The child who had only communication problem is called specific language impairment (SLI). Children with SLI are often delayed in starting to talk and usually have difficulty understanding the spoken language.

Factors associated with delayed language development were divided into two groups, biological factors and environmental factors. The biological factors are gender, family history of late talking, and perinatal problems[6,10,11]. The environmental factors are maternal education, socioeconomic status, and TV viewing habit[6,11,12].

The present study aimed to identify factors affecting the delayed language development in 18 months to three years old children in Naresuan University Hospital.

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How to cite this article: Weerakul J. Factors Associated with Delayed Language Development in 18 Months to 3-Years-Old Children in Naresuan University Hospital. J Med Assoc Thai 2019;102:95-9.

Materials and Methods

The present investigation was a cross-sectional case-control study by collecting data between June 2014 and January 2017 at Naresuan University Hospital. The present study was approved by the Institutional Review Board of Naresuan University. Parental consent was obtained from all participants.

The sample size was calculated using the no interactive activity during TV viewing risk variable in Chonchaiya and Pruksananonda. Television viewing associated with delayed language development[12]. The alpha and beta coefficient were 0.05 and 0.2, respectively. The sample was 30 case subjects and 30 control subjects.

The participating children were eligible if they met the following criteria, age 18 months to three years, only delayed language development by Denver developmental assessment in the case group and normal development in the control group. The exclusion criteria were hearing impairment, autistic spectrum disorder, abnormal chromosome, cleft lip, and cleft palate.

All of the participating children received hearing screening by otoacustic emission test. The delayed language development means the child delayed only language item for age by the Denver Developmental Screening. The case-group obtained autistics spectrum disorder screening by Modified checklist for Autism in Toddlers (M-CHAT).

The delayed language development participants were collected from the child developmental clinic and the normal development participants were selected by simple randomized sampling from children who came to well baby clinic at Naresuan University Hospital.

After the inform consents were obtained from the parents. The children were assessed by Denver II and divided into two groups (the case group and the control group). The parents were interviewed by a trained research assistance. The questionnaire consists of two parts. The first part is the general information about the child (such as gender, age, gestational age, and birth weight), and information of mother, father, and caregiver. In addition, the family history of delayed language development was reviewed. The second part is information about daily activity of the main caregiver and the child.

Statistical analysis

Demographic data were analyzed by percentage and compared the two groups by Chi-square test. The variable factors were analyzed by Chi-square test. All the factors were conducted at p-value lower than 0.05 for significance level. Statistical analysis was done by SPSS Program version 20.0.

Table 1. Demographic data of participants

	Case group (n = 30) n (%)	Control group (n = 30) n (%)	p-value*
Gender			1.000
Male	23 (76.7)	23 (76.7)	
Female	7 (23.3)	7 (23.3)	
Age (months)			0.774
11 to 23	22 (73.3)	21 (70.0)	
More than 23	8 (26.7)	9 (30.0)	
Order of birth			0.052
1st	24 (80.0)	17 (56.7)	
More than 1st	6 (20.0)	13 (43.3)	
Gestational age (weeks)			0.222
38 to 42	21 (70.0)	25 (83.3)	
Others	9 (30.0)	8 (26.7)	
Birth weight (g)			0.405
2,500 to 3,500	19 (63.3)	22 (73.4)	
Others	11 (36.7)	8 (26.7)	

* p-value <0.05

Results

Sixty participants were enrolled in the present study and divided into two groups, delayed speech group and normal development group. Twenty-three boys and seven girls were included in both case and control group. Mean age (±SD) were 2.0±0.5, 2.0±0.4 years in the case group and control group, respectively. No significant difference was seen between the two groups (Table 1).

The study showed that the maternal education level significantly associated with delay speech in children at p-value 0.01 (OR 0.22, 95% CI 0.069 to 0.689). Children whose mothers had a bachelor degree or higher had more delayed speech than children whose mothers had education below bachelor degree at about 4.57 times. In the child activities aspect, the factors that associated with delay speech were spending time to play alone for more than one hour per day and time to watch TV or other media for more than two hours per day, p-value 0.01 (OR 0.27, 95% CI 0.088 to 0.807) and 0.02 (OR 0.26, 95% CI 0.079 to 0.870), respectively. Children who spend time to play alone for more than one hour per day were approximately 3.75 times more likely to have speech delay. Children who watched TV or other media for more than two hours per day were approximately 3.82 times more likely have speech delayed (Table 2).

Table 2. Factors associated between case-control groups

Factor	Case group (n = 30) n (%)	Control group (n = 30) n (%)	95% CI	p-value*
Maternal factors				
Age (years)			0.316 to 2.418	0.795
• Less than 30	16 (53.3)	17 (56.7)		
• More than 30	14 (46.7)	13 (43.3)		
Education level			0.069 to 0.689	0.007
• Below Bachelor degree	6 (20.0)	16 (53.3)		
• Bachelor degree and higher	24 (80.0)	14 (46.7)		
Paternal factors				
Age (years)			0.299 to 2.498	0.787
• Less than 30	10 (33.3)	11 (36.7)		
• More than 30	20 (66.7)	19 (63.3)		
Education level			0.134 to 1.090	0.330
• Below Bachelor degree	13 (43.3)	20 (66.7)		
• Bachelor degree and higher	17 (56.7)	10 (33.3)		
Caregivers factors				
Take care by day care			0.209 to 1.884	0.405
• No	19 (63.3)	22 (73.3)		
• Yes	11 (36.7)	8 (26.7)		
Child activities				
Time to play alone (hours/day)			0.088 to 0.807	0.017
• Less than 1	14 (46.7)	23 (76.7)		
• More than 1	16 (53.3)	7 (23.3)		
Time to watch TV or other media (hours/day)			0.079 to 0.870	0.024
• Less than 2	17 (56.7)	25 (83.3)		
• More than 2	13 (43.3)	5 (16.7)		

CI=confidence interval

* p-value <0.05

Discussion

The National Survey of Health Status in Thailand reported that approximately 10% of 2-year-old children cannot say one meaningful word[13]. The delay in language development is one of the most important delayed development. If the cause or risk factors of the delayed language development were detected, it can prevent these conditions and promote the normal development. The present study found that the most cases of delayed speech were male gender and the mean age was 24 months old. This finding agreed with the previous study[5].

It can be stated that, delayed language development children associated with high education mother. Some studies found that delayed language development children did not associate with maternal education[6,14]. On the other hand, some study showed that delayed language development children associated with low maternal education[5,11,15,16]. This probably is due to the site of data collection. The present study was done in a University Hospital, and had enough cases for early detection the delayed language development. However, this factor is still controversial and should be further studied to clarify the matter.

Children who spend time to play alone for more than one hour per day were approximately 3.75 times more likely to have speech delay. Children who play alone without caregiver supervision can make no interaction with other people. Children at 18 to 36 months are developing communication skill. They need two-way communication to develop this skill. Although, children need time to play alone to develop thinking, exploring, and creating, however, if they play alone too much, young children will be unable to make relationship with others. Playing with another person decreased the risk for delayed speech[6,17].

It can be also noted that very young children watched television or other media more than usual

because the current media is easily acquired from the internet. There are a wide variety of contents obtained from the internet, so the children enjoy watching them. These children did not play with parents and other children, so they lacked the opportunity to develop communication skills. Children who watched television or other media for more than two hours per day were approximately 3.82 times more likely to have speech delays. These results are supported by recent studies[12,18,19]. The American Academy of Pediatrics (AAP) also discourages such media for children younger than two years[20]. Therefore, caregivers should be aware of the disadvantage of allowing children under two years to watch television.

There were some limitations in the present study. Firstly, the Denver developmental assessment screening test is not specific to delayed language development. The sensitivity and specificity of The Denver developmental assessment for delayed language development was 0.56 to 0.83 and 0.43 to 0.8, respectively. However pediatricians widely use this test because it is simple and reliable. Secondly, the sample size was too small and from a single center. Further study should include larger sample size and multi-centers to represent general population. Finally, the present study was retrospective interview from parents, which may caused bias in recall memory. The association between delayed language development children and high education mothers should be further evaluated in detail of family activities.

Conclusion

Factors associated with delayed language development in 18 months to three years old children in Naresuan University Hospital were highly educated mother, children spend time to play alone more than one hour per day and watched TV or media for more than two hours per day.

What is already known on this topic?

Delayed language development is the most common developmental problem in children. Prevalence of delayed language development increased recently. Factors associated with delayed language development divided into biological factors such as male gender and family history of late talking and environmental factors such as socioeconomic status.

What this study adds?

This study showed that mothers with higher education were at higher risk for child delayed speech. Mothers or caregivers should promote language development regularly. It is also important to provide quality family time. Adults should play with child and should not let the children aged between 18 months and three years play alone without supervision.

Acknowledgement

This research was supported by Naresuan University, Phitsanulok, Thailand. The author is grateful to Nadda Padsee for collecting data, Pramote Wongsawat for statistical analysis, and Sirapop Weerakul for constructive recommendation for manuscript. The critical reading of manuscript by Professor Dr. Waykin Nopanitaya, Faculty of Medicine, Naresuan University is also acknowledged.

Conflicts of interest

The author declares no conflict of interest.

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