

Research Article

Factors Associated with Developmental Verbal Disorder in 5-Years-Old Children in Banda Aceh City

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Abstract: Developmental disorder of speech, language and or communication affects many things, including school academic achievement, general skills, social relations and work. This study aimed to determine the factors associated with developmental verbal disorders in 5-year-old children. The type of this research was quantitative with cross sectional study design. The sample used was mothers with 5-year-old children totaling 140 people who were randomly selected in a sub-district in Aceh, Indonesia. The method of data collection used was a questionnaire and analyzed using descriptive and inferential statistics. Chi square test results indicated that the factors associated with verbal development were prenatal, delivery and postpartum factors. While the logistic regression test results showed that the prenatal factor was the most dominant factor related to the ability of verbal development (P Value: 0.0001; OR: 59,386). It is expected that families, especially mothers, get prenatal care during their next pregnancy and train language development by communicating correctly and clearly with children. It is also suggested that health workers at the Community Health Center (Puskesmas) improve health promotion about the importance of mother care during pregnancy.

Keywords: Factors, Development, Verbal Disorder, language

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INTRODUCTION

Good quality children can be achieved by ensuring that either the child's growth or development process is good. Growth refers to the quantitative changes, such as height, weight, and head circumference, while development is a gradual change and increase in abilities, such as motor skills, sensory, language, and social (Hockenberry & Wilson, 2013). Development is the increased ability (skill) in the structure and function of the body that is more complex in a regular and predictable pattern, body tissues, organs and differentiated organ systems of body cells, body tissues, organs in organ systems that develop in such a way that each of them can fulfill its function. It is also including the development of emotions, intellectuals, and behavior as a result of interaction with the environment (Cahyaningsih, 2011).

Developmental Verbal Disorder or Developmental Language Disorder (DLD) is a new term that previously known as Specific Language Impairment (SLI). Developmental Verbal Disorder is diagnosed when children fail to acquire their own

language for no obvious reason (Bishop, Snowling, Thompson, & Greenhalgh, 2016). Children who experience developmental verbal disorders will have difficulty understanding what people say to them.

According to the National Institute on Deafness and Other Communication Disorders (NIDCD, 2016), about 9% of speech disorders are the most common communication disorders in children aged 3-17 years. Regarding language development, the National Center for Health Statistics (NCHS) reports that 70% of children at that age have not been able to arrange sentences correctly and 30% of children have been able to arrange sentences correctly (Black, Vahratian, & Hoffman, 2015).

In Jakarta, the biggest complaint of patients when checking their children was speech disturbance by 46.8% (Dewanti et al, 2012). In Surakarta 595 children experienced speech delays during 2016 (Safriana, 2017). Hartanto, Selina, Zuhriah, and Fitra (2016) stated that during 2007 at the Child's Growth Polyclinic Dr. Kariadi Semarang found 22.9% of children from 436 new visits came with complaints of speech delays.

Based on studies conducted, the prevalence of speech delays in early childhood (at the age of 2-4.5 years) was 2.3 - 19%. In Indonesia, 16% of children under 5 years old experience mild to severe neurological and brain development disorders (Narendra, Sularyo, Soetjningsih, Ranuh, & Wiradisuria, 2012).

Guernsey, Levine, Chiong, and Severns (2012) stated that explained that good media requirements for children should pay attention to 3C, called content, context and child. Meanwhile, according to the American Academy of Pediatrics good media requirements for children include those used for children more than 2 years, the assistance of adults when using and exposing them no more than 2 hours in a day (COC, 2013).

It is estimated that as many as 87.5% of children in Indonesia live with their biological parents. This indicates that most children in Indonesia still receive care from their parents, although not all families have the power to help their children grow and develop properly, some families have demographic status issues such as education, employment, lack of income support thus inhibiting child development (KPPA & BPS, 2018).

Theoretically the form of verbal development at the age of 5 years is the ability to name objects in the picture. This ability continues to grow like the use of phrases and understanding simple instructions, repeating words / sentences that have just been heard, until the ability to answer adult questions. Children will express their opinions verbally in daily communication if the child has passed the prior stage of speech development. The successful of passing one stage will be related to the upcoming stage of it (Intikhobah, 2012).

Developmental disorder of speech, language and or communication affects many things, including school academic achievement, general skills, social relations and work (Andriana, 2011). Prevention of this disorder will provide a better outcome for the future of nation (Brebner, Jovanovic, Lawless, & Young, 2016). Children who are in a healthy relationship with their family (full of attention and affection with their parents) can facilitate children's language development. Conversely, if the relationship between a child and his parents is not healthy, the child's language development tends to experience abnormalities such as stuttering, unclear speech, rude and disrespectful words and refuse to express his opinion (Andriana, 2011)

The study of language development and influencing factors in children aged 3-6 years by Muluk, Bayoğlu, and Anlar (2014) shows that groups of children aged 5 years (57.0-63.0 months) will normally be able to master language is able to count two blocks, analyze conflicting words, and understand the definition

or meaning of words. For gross motor children can stand balanced one foot for 2 seconds, walk in balance with the heel of the foot for 5 seconds. The fine motor responses are normally able to remember crosses, circles, squares, distinguish longer and shorter lines, and draw humans. As for social cognitive, 5-year-old children are able or independent in buttoning their clothes, and wearing clothes or dresses without assistance.

The pattern of communication performed in families with mothers who have a high educational background will find it easier to develop verbal abilities to children (Andriana, 2011). Children from poor families will experience language development delays compared to children from families whose economic level is better. This condition is caused by the lack of learning opportunities for children from poor families.

should be two-way communication because this communication pattern will directly provide opportunities for children to express their opinions and / or it will train toddler to speak. However, if the communication delivered is only one-way (from parents) then it is difficult for children to practice speaking or developing their language skills. In developing communication to children, parents have an important role in doing it, such as the demographics of mothers consisting of higher education. A mother will be easier to develop children's verbal skill (Andriana, 2011).

The results of the preliminary study conducted by researchers at one of the health centers in Aceh on several mothers who have children with verbal developmental disorders, showed the lack of interaction between mother and child because most mothers whose children have verbal disorders must leave the child to help the family economy and low education mothers so that they do not know the cause or signs of a child experiencing a language development disorder. Children's development needs to be sharpened and developed rapidly through stimulation. Early stimulation can be provided by parents and day care centers. Stimulation by parents and child care is associated with parenting and this relates to aspects of child development. Based on the description above, the purpose of this study is to identify the factors associated with verbal developmental disorders of 5-year-old children.

STUDY METHOD

The type of this research was quantitative with cross sectional study design. The population in this study was 215 mothers who had 5-year-old children in Kuta Alam District, Banda Aceh City. Based on the calculations, the number of samples was 140 people. The instrument was developed by researchers based on literature and tested for validity and reliability. Data

were analyzed by chi-square test and binary logistic regression with the stepwise method.

RESULT
Respondents characteristics

Table 1. The characteristics of respondents (n=140).

| No | Characteristics | f | % |
|---------------------|------------------------------------|-----|------|
| Father's age | | | |
| 1 | Esrlly adulthood | 87 | 62.1 |
| 2 | Middle adulthood | 53 | 37.9 |
| Mother's age | | | |
| 1 | Early adulthood (20-35 years old) | 118 | 84.3 |
| 2 | Middle adulthood (36-45 years old) | 22 | 15.7 |
| Father's education | | | |
| 1 | Higher | 45 | 32.1 |
| 2 | Secondary | 84 | 60.0 |
| 3 | Primary | 11 | 7.9 |
| Mother's education | | | |
| 1 | Higher | 38 | 27.1 |
| 2 | Secondary | 89 | 63.6 |
| 3 | Primary | 13 | 9.3 |
| Father's job | | | |
| 1 | Civil servant | 40 | 28.6 |
| 2 | Contract worker | 15 | 10.7 |
| 3 | Entrepreneur | 30 | 21.4 |
| 4 | Seller | 35 | 25.0 |
| 5 | Handyman | 9 | 6.4 |
| 6 | Fisherman | 11 | 7.9 |
| Mother's job | | | |
| 1 | Civil servant | 23 | 16.4 |
| 2 | Contract worker | 13 | 9.3 |
| 3 | House wife | 104 | 74.3 |
| Family's income | | | |
| 1 | High | 100 | 71.4 |
| 2 | Moderate | 27 | 19.3 |
| 3 | Low | 13 | 9.3 |
| Baby's birth weight | | | |
| 1 | 2.000–2.499 grams | 27 | 19.3 |
| 2 | 2.500–4.000 grams | 113 | 80.7 |

Table 1 shows that the highest number and percentage of 140 toddler families, 87 (62.1%) fathers and 118 (84.3%) mothers were early adulthood, 84 (60.0%) fathers and 89 (63.6%) mothers graduated from secondary school, 40 (28.6%) fathers work as civil servants, 104 (74.3%) mothers as housewives, 100 families (71.4 %) have a high income level and 113

families (80.7%) have the birth weight of babies of 2,500 - 4,000 grams.

Factors Related to the Development of Children's Verbal

Factors related to verbal development of 5-year-old children can be seen in the following Table 2.

Table 2. The factors associated with verbal development in 5-year-old children (n=140)

| Variable | Verbal ability development | | | P Value |
|--------------|----------------------------|---------------|----------------|---------|
| | Good f (%) | Less f (%) | Total f (%) | |
| Acehnese | 78 (83.0) | 16 (17.0) | 94 (100,0) | 1,000 |
| Non-Acehnese | 38 (82.6) | 8 (17.4) | 46 (100,0) | |
| Sex | | | | 0,051 |
| Male | 52 (91.2) | 5 (8.8) | 57 (100,0) | |
| Female | 64 (77.1) | 19 (22.9) | 83 (100,0) | |
| Heredity | | | | 0,129 |
| Yes | 29 (93.5) | 2 (6.5) | 31 (100,0) | |
| No | 87 (79.8) | 22 (20.2) | 109 (100,0) | |

| Variable | Verbal ability development | | | P Value |
|--------------------|----------------------------|---------------|----------------|---------|
| | Good f (%) | Less f (%) | Total f (%) | |
| Prenatal factor | | | | |
| Good | 110 (95.7) | 5 (4.3) | 115 (100,0) | 0,0001 |
| Less | 6 (24.0) | 19 (76.0) | 25 (100,0) | |
| Delivery factor | | | | |
| Good | 80 (93.0) | 6 (7.0) | 86 (100,0) | 0,0001 |
| Less | 36 (66.7) | 18 (33.3) | 54 (100,0) | |
| Post-partum factor | | | | |
| Good | 89 (89.9) | 10 (10.1) | 99 (100,0) | 0,0001 |
| Less | 27 (65.9) | 14 (34.1) | 41 (100,0) | |

Table 2 demonstrates that ethnicity (P=1.000), sex (P=0.51) and hereditary factors (P=0.129) were not associated with verbal development in 5-year-old children. While prenatal factors (P = 0.0001), delivery factors (P = 0.0001) and postpartum factors (P = 0.0001) were significantly associated with verbal ability development in 5-year-old children.

The results of further analysis of internal and external factors as predictors of verbal development ability in children aged 5 years are shown in the following Table 3.

Table 3. The analysis of internal and external factors as a predictor of verbal ability development in 5-year-old children in (n=140)

| Predictor | B | OR | P-Value | 95% CI | |
|-----------------|--------|--------|---------|--------|---------|
| | | | | Lower | Upper |
| Prenatal factor | 4.084 | 59.386 | 0.0001 | 15.415 | 228.778 |
| Delivery factor | 1.590 | 4.903 | 0.023 | 1.246 | 19.296 |
| Constant | -1.798 | 0.166 | 0.003 | | |

Table 3 shows that prenatal factors (P = 0.0001) and delivery factors (P = 0.023) obtained P values < 0.05 so that Ho was rejected, which means that these variables were significant predictors related to verbal ability development in 5-year-old children. Prenatal factors were the most dominant predictors associated with verbal development in 5-year-old children (OR: 59,386). Prenatal factors related to the ability of verbal development in 5-year-old children 59 times.

DISCUSSION

Basit, Hughes, Iqbal, and Cooper (2015), ethnicity related to children's language development, the effects cannot be distinguished from the effects of socioeconomic status and there were group specific relationships associated with language style features. The effect of ethnicity on language development is difficult to isolate because ethnicity has socioeconomic status and dialectical variability in language. The literature on ethnicity and language learning is rare, with African-Americans being the most studied group, showing that white parents provide more information about objects than African-American parents, and middle-class parents from both ethnicities provide more information than working-class parents (Faitar, 2011).

Zuckerman, Mattox, Sinche, Blaschke, and Bethell (2014) mentioned that racial/ethnic and language differences exist in the diagnosis and treatment of behavioral conditions and early childhood

development. For example, compared to other children, African-American and Latin children are less likely to be diagnosed with autism spectrum disorder (ASD), and are more likely to be diagnosed at an older age and with more severe symptoms. Similarly, Nowell, Brewton, Allain, and Mire (2015) found that there was no differences based on race or ethnicity in the verbal communication disorders incidence on children. Study which investigate the role of race and ethnicity in the diagnostic level of verbal developmental disorders have had vague results, which often differ in terms of survey techniques, measurement approaches and operational definitions and are complicated by other factors that often correlate with race and ethnicity (e.g. socioeconomic status and acculturation).

Based on the results of this study, it can be concluded that race or ethnicity is not a factor associated with verbal ability development in 5-year-old. The difference with the results of previous studies may be caused by the parents' educational background: 60.0% fathers and 63.6% mothers only graduated from secondary education levels. This conclusion is in agreement with the study conducted by Sunderajan and Kanhere (2019) is the significant risk factors for speech and language delays in children found are low father's education (P = 0.008) and low maternal education (P = <0.001), kinship (P = <0.001). Similarly, Wallace *et al.*, (2015) also found that risk factors associated with delays in speech and languages were male, family history and low education parent.

Concludes that there was no significant association between sex and verbal ability development in 5-year-old children ($P = 0.051$). The results of this study differ from those proposed by Siu (2015) which explained that the most consistently reported risk factors for speech and language delays in various literatures were male and prenatal factors, such as prematurity and low birth weight. Rosenbaum and Simon (2016) also said that in a study of speech disorders, three risk factors were found: male, low maternal education and positive family history of communication development disorders, which were individually associated with increased likelihood of speech disorders, but the likelihood of such disorders was almost eight times greater in children with all three risk factors than in children without any of these factors.

Based on national databases in the United Kingdom, Dockrell, Lindsay, Roulstone, and Law (2014) reported higher odds ratios (2.5) of speech, language and communication needs in boys than girls. Marrus *et al.*, (2018) also revealed that there was a positive association observed between female, mother's education and income with speech impediment disorders.

Boys have the bigger risk for delayed language development than girls. British scientists have measured the male sex hormone (testosterone) in the amniotic fluid and they found that the level was related to the development of autism and language disorders. Pérez-Pereira and Conti-Ramsden (2013) explain that boys are generally a little slower in language development than girls, but most of them catch up the lag in the first year. Therefore, many boys may get risks for persistent language disorder and experience temporary language difficulties which will be lost before school age.

Regarding heredity factors, the results of this study differ from those proposed by Rosenbaum and Simon (2016) who said there were three variables associated with impaired communication development in children; male, low maternal education and positive family history (heredity). Furthermore, Newbury and Monaco (2010) found that hereditary factors contribute to susceptibility to speech and language disorders. Speech and language deficits are inherited and show strong family aggregation.

Bishop *et al.*, (2016) reported an increase in the level of appropriateness of monozygotic twins compared to dizygotic twins and showed that much of this aggregation could be related to hereditary relationship. However, it is generally assumed that the mechanism of heredity underlying the susceptibility to speech and language disorders is multifactorial, which involves complex interactions between several variants of common heredity and environmental factors. Despite

this complexity, researchers have recently begun to identify hereditary factors that might play a role in the etiology of speech and language disorders.

On the other hand, Kang and Drayna (2011) revealed that most of the communication disorders were prominent in children. A number of these disorders have been shown to cluster in families which indicate that heredity is involved, but the etiology at the molecular level is not well understood. In the last decade, the hereditary method has proven its effectiveness in understanding this etiology. Many genes are important for language development and research shows that different genes are involved in different types of language difficulties. Difficulty reading and writing in families is a major risk factor for language difficulties that arise slowly. Researchers believe that both specific genes and factors in a child's external environment can cause delays in language development at the age of three to five years (Safwat & Sheikhy, 2014).

For prenatal factors, the results of this study are in line with those proposed by Torabi, Amir Ali Akbari, Amiri, Soleimani, and Alavi Majd (2012), who found that multiple pregnancy, low birth weight, abortion habits, maternal medical disorders in pregnancy, and gestational diabetes having a significant correlation with developmental delay in children ($P < 0.04$). Moreover, Wang, Geng, Liu, and Zhang (2017) also revealed that during the prenatal period, factors associated with the risk of impaired verbal development were maternal age > 35 years, white and Asian maternal races, gestational hypertension, gestational diabetes, low maternal education, abortion and antepartum bleeding.

Furthermore Ornoy, Weinstein-Fudim, and Ergaz (2016) explained that the prenatal causes of speech development disorders can be divided into the following environmental chemicals; drugs such as valproic acid, thalidomide, misoprostol; alcohol, cocaine, and toxic metals the mother consumes during pregnancy, exposure to air pollution, maternal infections during pregnancy (i.e. rubella, CMV), maternal and fetal inflammation and maternal disease (i.e. diabetes mellitus), including autoimmune diseases. Meanwhile Glover (2011) stated that there was a relationship between prenatal stress and impaired speech development in children. Many independent prospective studies showed that if a mother got stressed, anxious or depressed during pregnancy, her child would be at higher risk for developing speech development problems. Changes in brain structure and function have been shown to be related to prenatal stress, and also to maternal experiences of early childhood trauma.

Kolevzon, Gross, dan Reichenberg (2017) mengatakan kondisi obstetrik telah dikaitkan dengan beberapa gangguan neurologis dan kejiwaan, termasuk

sindrom down, disleksia, retardasi mental dan skizofrenia, serta dengan kesulitan perkembangan, seperti masalah bicara dan bahasa, masalah internalisasi, masalah perhatian, masalah sosial dan hiperaktif. Meskipun penelitian yang signifikan tentang peran potensial komplikasi kehamilan dalam asal autisme, sifat kausal dari asosiasi ini masih diperdebatkan. Sementara itu Wang *et al.*, (2017) mengatakan beberapa faktor resiko prenatal yang dapat menyebabkan gangguan perkembangan bicara pada anak, yaitu: 1) faktor prakonsepsi; 2) infeksi prenatal; 3) penyakit kronis ibu; dan 4) defisiensi nutrisi.

Kolevzon, Gross, and Reichenberg (2017) emphasized that obstetric conditions have been linked to several neurological and psychiatric disorders, including down syndrome, dyslexia, mental retardation and schizophrenia, as well as with developmental difficulties, such as speech and language problems, internalization problems, attention problems, mental problems, social and hyperactive. Despite significant research on the potential role of pregnancy complications in the origin of autism, the causal nature of this association is still debated. Meanwhile Wang *et al.*, (2017) said several prenatal risk factors that can cause impaired speech development in children are; 1) preconception factors; 2) prenatal infection; 3) chronic maternal illness; and 4) nutritional deficiencies.

Whitehouse, Shelton, Ing, and Newnham (2014) also reported that a number of risk factors for language development disorders include pregnancies complicated by gestational diabetes, antepartum hemorrhage, maternal smoking or alcohol consumption, prolonged labor and cesarean delivery, and poor neonatal health, as indexed by low Apgar scores and time spent in special care units.

Fox, Dodd, and Howard (2012) stated that there was a specific causal connection between perinatal difficulties and speech and language disorders. Preterm birth and low birth weight are reported to have a negative effect on speech and language development. However, Kolevzon *et al.*, (2017) found no significant differences in the number of events between premature children and low birth weight. While most research has focused on children with language disorders, Rosenbaum and Simon (2016) reported speech disorders in premature children.

Harbert, Jett, Appelbaum, Nass, and Trauner (2012) stated that a number of studies have looked at perinatal factors that might predict speech disorders in children, but little research on the relationship of fetal distress or neonatal seizures in speech disorders in childhood. Most research has focused on the relationship of birth weight, gestational age, and infant feeding on speech difficulties. Halliday, Tuomainen, and Rosen (2017) have conducted several studies on early brain injuries with various causes and ages and

have found that speech development disorders are more likely to occur if brain injuries occur before the age of 2 years. Sunderajan and Kanhere (2019) stated that there was the role of other specific perinatal factors, including fetal distress and neonatal seizures, based on the results of the study found that more than half of the children studied had difficulty speaking during adolescence.

For postpartum factors, the results of this study are consistent with those presented by Flores, Souza, Moraes, and Beltrami (2013), that the emotional state of postpartum mothers such as depression and anxiety are positively related to the risk of speech development in children. Symptoms such as depression and postpartum anxiety are risk factors for children's speech development, and may be associated with failure to form safe attachments in children. The psychological support of the mother to her baby is very important for self-formation, and it is the main base for a healthy mother-baby relationship representing safety and security for the child and is very important for the development of the child's verbal abilities.

Furthermore Weissman (2018) said that persistent and severe postpartum problems can increase the risk of adverse outcomes in children. Research shows an association between postpartum problems and delayed cognitive and language development, irregular or unsafe attachment, higher levels of behavioral problems, and lower rates. In addition, there is a relationship between postpartum problems and higher levels of depression in children during the last teenage years (16 to 18 years).

Infants who are in danger of delayed speech development have a medical history of one or more risk factors in the pre, peri, or postnatal period. Risk factors for delayed speech development include maternal and infant biological factors, psychosocial (individual and family), and environmental factors. In the prenatal period, factors such as young maternal age, short intervals between pregnancies, history of previous abortion, multiple pregnancy, preeclampsia, abruptio placenta, immaturity and intrauterine growth restriction, underlying maternal diseases (including multi-morbidity and addiction), loss of primary care during pregnancy, low maternal education, and being a single housewife are considered to increase the risk of delayed speech development in infants. Delivery by cesarean section and preterm birth are the most important risk factors for delayed speech development in the perinatal period, and male sex, low birth weight, first minute Apgar score <7, intracranial hemorrhage, kernicterus, and non-breastfeeding are all risk factors in post-natal period (Drozd-Dąbrowska, Trusewicz, & Ganczak, 2018).

The logistic regression analysis results in Table 3 can be concluded that the prenatal factor (P =

0.0001) and the delivery factor ($P = 0.023$) obtain a P Value ≤ 0.05 so that H_0 is rejected, which means the variable is a significant predictor related to verbal ability development in 5-year-old children. Based on the results of this study, it can be concluded that the less prenatal and childbirth factors, the less the ability of verbal development of children aged 5 years. The results of this study also provide conclusions that prenatal factors are the most dominant predictors associated with verbal ability development in 5-year-old children (OR: 59,386). Prenatal factors related to the ability of verbal development in 5-year-old children 59 times.

The results of this study are in agreement with research conducted by Taylor, Rice, Christensen, Blair, and Zubrick (2018), that there are five risk factors for language development disorders that can be detected in the prenatal, perinatal and neonatal periods in twins without physical disabilities. The benefits of early intervention must be translated to reduce the risk of impaired language development in age. The current study was chosen in twins without overt defects but did not select or control for birth weight and / or gestational age variations. This means that the independent risk posed by birth weight, gestational age and fetal growth restriction is quantified in a model that includes pregnancy and birth risks as well as sociodemographic risks.

Kolevzon *et al.*, (2017) stated that the results of the study have drawn attention to the role of gestational diabetes, long periods of spontaneous breathing, restriction of fetal growth in the etiology of late language disorder. These risks are all well-known complications of twin pregnancy and risk factors for language development disorders. This study has shown a widespread adverse relationship of this risk to children's neurological development in the second year of life. Prenatal life is a critical phase of brain development, where even subtle differences in fetal growth have been linked to differences in postnatal brain maturation and cognitive abilities in infants.

Chien *et al.*, (2019) found that prenatal and perinatal factors can increase the risk of speech development disorders in children. This study compared the frequency of prenatal and perinatal factors among 323 problems with impaired speech development in children (mean age \pm standard deviation, 10.7 ± 3.5 years; men, 91.0%), 257 siblings who were unconnected (11.7 ± 4.5 ; 42.8%), and 1504 usually develop controls (8.9 ± 1.6 years; 53.1%); and investigate its effects on the severity of speech development disorders in children. This study found that children with speech development disorders and their unrelated siblings had more prenatal / perinatal events than those who usually developed controls with a higher number of prenatal / perinatal factors in the proband than unrelated siblings. Prenatal / perinatal

events are associated with greater stereotypical behavior, social-emotional problems, social-communication deficits, and overall severity. We also found that six prenatal / perinatal factors (i.e. preeclampsia, polyhydramnios, oligoamnios, placenta previa, umbilical cord, and gestational diabetes) were associated with the severity of speech development disorders in children. The findings of this study indicate that prenatal and perinatal factors have the potential to moderate the clinical expression of impaired speech development in children.

CONCLUSION

Prenatal and delivery factors were factors that related to the verbal ability development in 5-year-old children.

SUGGESTION

Based on the results of the study it is expected that health workers at the health center in order to further enhance health promotion about the importance of care during pregnancy for mothers.

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