

The Correlation Between Parental Stimulation and Motor Development in Stunted Toddlers

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Abstract--- *Stunted toddlers cannot explore their fine and gross motor skills because they tend to have shorter body and change in brain structure and function in brain development caused by the late maturity of cerebellum cells. Stimulation plays an essential role in improving child development, especially children's motor development. This study aimed to analyze the role of parents' stimulation in motor development in stunted toddlers. The study design used was a cross-sectional approach. The sample was 96 mothers, with their stunted toddlers using simple random sampling. Parental stimulations was the independent variable and motor development was the dependent variable. Data collection used the Denver Developmental Screening Test (DDST) questionnaire. Data were analyzed using the Spearman rank correlation test with a significance $p < 0.05$. The results showed that parent's stimulation has a significant relationship with the gross motor development of stunted toddlers ($p = 0.02$, $r = 0.237$), and parent's stimulation has a significant relationship with the fine motor development of stunted toddlers ($p = 0.002$, $r = 0.314$). If the parents provide a pleasant stimulation pattern, then the motor development of children will be proper. The role of a parent's stimulation can be done by stimulating by habituation, stimulating by example, stimulating with exercise, and stimulating with competence. Habituation is mostly used by parents to encourage their children.*

Keywords--- *Motor Development; Parental Stimulation; Stunted*

I. INTRODUCTION

Stunting is a linear growth disorder that is not age-appropriate due to chronic malnutrition. Stunting indicates a public health problem because it is associated with an increased risk of morbidity and mortality. Stunted toddlers cannot explore gross and fine motor skills because stunted toddlers have shorter bodies, changes in the structure, and function in brain development due to delays in the maturity of cells in the cerebellum and unbalanced bodily functions [1–3]. Impaired motor development is not only due to nutritional factors and childcare patterns, but the environment also plays an important role. Parents' stimulation plays a vital role in influencing a child's development. A stimulus is a movement to stimulate the necessary abilities of children aged 0-6 years so that children grow optimally. The stimulation must be done by parents, family members, or adults around the children [4, 5]. [4].

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The results of a preliminary study conducted by researchers at the Surabaya Public Health Center showed the results that in seven toddlers stunting age using DDST (Denver Development Screening Test) observation sheets found three toddlers experiencing delays in motor development. Stimulation will be more effective when paying attention to the needs of children following the stage of development. The provision of inappropriate stimulation in children can be a cause of delay and disruption of motor development in children. Factors that influence parents in stimulating children include profound knowledge of parents, lack of ability of parents to boost child development, and parents being busy with work [6, 7].

Community Health centers' efforts in overcoming stunting are routine nutritional monitoring every month through the Integrated Healthcare Center (posyandu) [8]. Weighing and measuring height are done every month to determine nutritional status. If toddlers who experience stunting and malnutrition get milk and complementary foods to raise their nutritional status. The number of stunted toddlers in Surabaya in 2016 was 457. The Community Health Center also runs a program from the Community Empowerment Agency (BAPEMAS), namely the Family and Toddler Development Program (BKB), to overcome growth and development problems. The Family and Toddler Development Program is an early childhood health promotion program for families and toddlers. Families who have children under five years old will be given knowledge about child growth and development [9]. Based on the data and background description above, the researchers were interested in researching the relationship of the role of parent stimulation with motor development in stunted toddlers.

AI. METHODS

This study used a correlational research design. A total of 96 parents and stunted toddlers in the public health center were included by simple random sampling techniques. The independent variable in this study was the role of parent stimulation, while the dependent variable in this study was motor development in stunted toddlers. The instrument used in this study was the stimulation role questionnaire to measure the independent variables and the Denver Developmental Screening Test (DDST) observation sheet to measure the motor development of stunted toddlers. The stimulation role questionnaire was adapted from previous research developed by Wati in 2016 with content testing through judgment experts [10]. There were two stages of data collection including the preparation and implementation stages. At the implementation stage, the researcher asked for informed consent from the respondents before data collection was performed. Data analysis was performed using the Spearman rank correlation test with a significance level of $p < 0.05$. This study has ethical approval from the ethical committee.

BI. RESULTS

The majority of respondents were mothers in the age group 20-35, totaling 72 people (75%). The characteristics of the parent respondents according to last education showed that they were mostly senior high school level, totaling 55 people (57.3%). The data above show that the majority of mothers did not work or were housewives, totaling 55 people (57.3%), and most respondents had a family income of more than 3,200,000 (Table 1).

Table 1. Demographic characteristics of parent respondents (n=96)

Demographic characteristics	n	%
Mother's Age		
< 20 Year	0	0
20-35 Year	72	75
>35 Year	24	25
Last Education		
Elementary School	8	8.3

Junior High School	13	13.5
Senior High School	55	57.3
Bachelor	20	20.8
Mother Occupation		
Housewives	55	57.3
Government Employees	6	6.3
Non-Government Employees	18	18.8
Entrepreneur	17	17.7
Family Income		
<3,200,000	34	35.4
>3,200,000	62	64.6

Table 2. Demographic characteristics of children under five years (n=96)

Characteristics	n	%
Age		
12-35 Month	46	47.9
36-60 Month	50	52.1
Gender		
Male	55	57.3
Female	41	42.7
Birth		
First	49	51
Second	39	39.6
Third	7	7.3
Fourth	1	1
Fifth	1	1

Table 3. Distribution of the role of parental stimulation (n=96)

Role of Parental Stimulation	n	%
Good	34	35.4
Adequate	59	61.5
Less	3	3.1

Table 4. Distribution of motor development (n=96)

Motor Development	Suspect		Normal		Total	
	n	%	n	%	n	%
Gross Motor	7	7.3	89	92.7	96	100
Fine Motor	10	10.4	86	89.6	96	100

Table 5. Results of the relationship of the role of parental stimulation with gross motor development and fine motor development in stunted toddlers (n=96)

Role of Parental Stimulation	Gross Motor Development						Fine Motor Development					
	Suspect		Normal		total		Suspect		Normal		total	
	n	%	n	%	n	%	n	%	n	%	n	%
Less	1	1	2	2.1	3	3.1	2	2.1	1	1	3	3.1
Adequate	6	6.3	53	55.2	59	61.5	8	8.3	51	53.1	59	61.5
Good	0	0	34	35.4	34	35.4	0	0	34	35.4	34	35.4
Spearman Rank Correlation	p=0.02 r=0.237						p=0.002 r= 0.314					

Table 2 showed that the majority of respondents were 36-60 months old, totaling 50 children (52.1%). Most of the children were boys. Most of the children were the first child in the family, totaling 49 children (51%).

Based on Table 3 above, it can be seen that the majority of parents perform motor stimulation: 59 people (61.5%), and the stimulation was good in 34 people (35.4%), and the stimulation was less in three people (3.1%).

Based on Table 4 it can be seen that almost all toddlers had normal gross motor development: 89 children (92.7%), while there was suspect gross motor development in 7 children (7.3%). Normal fine motor development was seen in 86 children (89.6%), while fine motor development was suspect in 10 children (10.4%).

Based on the results in Table 5, the statistical test results using the Spearman rank correlation from parental stimulation and gross motor development obtained a significance level of $p=0.02$. Statistical test results using the Spearman rank correlation from parental stimulation and fine motor development obtained a significance level of $p = 0.002$.

IV. DISCUSSION

Based on the results, it can be seen that there is a relationship between the role of parental stimulation and gross motor development in stunted toddlers. This is in line with research conducted by Permatasari in 2011 that showed there was a relationship between early stimulation and child development [11]. Giving stimulation for growth and development in children can be done by the mother or the closest person so that the child can grow and develop optimally. Providing early stimulation can help and allow children to achieve their intellectual potential. When the stimulation of the mother to her child is right, the child's gross motor development will be optimal [12–14]. Children at home tend to interact a lot with their mothers. So, the role of the mother as a parent in providing stimulation is vital to form the healthy gross motor development of children. Stimulation can also be obtained in early childhood education (PAUD) [15]. In general, early education aims to provide stimulation for the development of children's potential. The role of PAUD educators is essential in stimulating growth in place of parents [16–18].

The role of parental stimulation with fine motor development in stunted toddlers has a relationship and positive direction. This is in line with research conducted by Iin Cempaka in 2016, showing the existence of a strong correlation between stimulation and fine motor development in children aged 0-5 years [19]. The provision of stimulation following the child's progress will make them more mature, both physically and psychologically [20]. Most of the parents performing stimulation in the sufficient category can form healthy fine motor development. When the stimulation of the mother to her child is proper, the child's fine motor development will be optimal [14, 21, 22]. Children at home tend to interact a lot with their mothers so that the role of the mother as a parent in providing stimulation is essential to form healthy fine motor development in children.

A small portion of parents provides less than half the stimulation role to form a suspect fine motor and form healthy fine motor development. A lack of stimulation can cause deviations in social, emotional, and motoric behavior in children. Lack of stimulation can cause differences in child development and even permanent disorders [5, 23, 24]. Parents are expected to offer stimulation even if it is a little but often. Stimulation is done by inviting children to interact and playing with children so that the stimulus is expected to be optimal.

V. CONCLUSION

Based on the results of research there was a significant relationship between the role of parental stimulation and the development of gross motor and fine motor skills in stunted toddlers with a low relationship level and positive direction. If parents provide a good pattern of stimulation, the child's motor development will be good. Stimulation can be done by involving older children and other family members. It is important for parents to understand the development of children in order to find out earlier if there is a developmental delay.

CONFLICT OF INTEREST

No conflict of interest was disclosed.

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REFERENCES

- [1] Febrikaharisma MH, Probosari E. Hubungan Antara TB/U dengan Fungsi Motorik Anak Usia 2-4 Tahun. Diponegoro University, 2013.
- [2] DESTIADI A. FAKTOR RISIKO KEJADIAN STUNTING PADA ANAK USIA 3-5 TAHUN DI DESA SIDOARUM, KECAMATAN GODEAN, KABUPATEN SLEMAN.
- [3] Larasati NN, Wahyuningsih HP. FAKTOR-FAKTOR YANG BERHUBUNGAN DENGAN KEJADIAN STUNTING PADA BALITA USIA 25-59 BULAN DI POSYANDU WILAYAH PUSKESMAS WONOSARI II TAHUN 2017.
- [4] Briawan D, Herawati T. Peran stimulasi orangtua terhadap perkembangan anak balita keluarga miskin. *J Ilmu Kel Konsum* 2008; 1: 63–76.
- [5] Kemenkes RI. Pedoman pelaksanaan stimulasi, deteksi dan intervensi dini tumbuh kembang anak di tingkat pelayanan kesehatan dasar. *Jakarta Dep Kesehatan, Direktorat Jenderal Pembina Kesehatan Masy.*
- [6] Andriana D. Tumbuh kembang & terapi bermain pada anak.
- [7] Chamidah AN. Pentingnya Stimulasi Dini Bagi Tumbuh Kembang Otak Anak. *Makal disampaikan pada talk show Tumbuh Kembang dan Kesehatan Anak pada tanggal*; 17.
- [8] Fitriani IS, Oktobriani RR. Stimulasi, Deteksi dan Intervensi Dini Orang Tua terhadap Pencegahan Penyimpangan Pertumbuhan dan Perkembangan Anak Balita. *Indones J Heal Sci* 2017; 1: 1–9.
- [9] Isma'inah D, ISMA'INAH DWI. STIMULASI ORANG TUA DENGAN PERKEMBANGAN ANAK USIA 4-5 TAHUN DI TK AISYIYAH BUSTANUL ATHFAL 14 WATESNEGORO NGORO MOJOKERTO. *KTI D3 KEBIDANAN*.
- [10] Wati IC. Hubungan stimulasi perkembangan terhadap perkembangan anak usia 0-5 tahun di RW 8 Kelurahan kalicari Kota Semarang. *Skripsi Jur Keperawatan Fak Kedokt Univ Diponegoro*.
- [11] Permatasari FD, Purwati Y. Hubungan Stimulasi Dini dengan Perkembangan Motorik Kasar pada Anak Usia Toddler di Teman Sejati Sarihusada Kotabaru Yogyakarta.
- [12] Ahda H, Erlyani N, Rahmayanti D. PERANAN STIMULASI ORANG TUA TERHADAP PERKEMBANGAN MOTORIK KASAR ANAK USIA 2-3 TAHUN DI PUSKESMAS SUNGAI BESAR BANJARBARU. *Dunia Keperawatan* 2017; 2: 79–86.
- [13] Dewi N. PERAN ORANG DEWASA DALAM STIMULASI MOTORIK KASAR PADA ANAK DELAYED WALKING (KETERLAMBATAN BERJALAN).
- [14] Kuncoro DH, Arifah S, Kp S, et al. Hubungan antara Stimulasi Ibu dengan Perkembangan Motorik Halus dan Kasar pada Anak Usia Toddler di PAUD Mekarsari Desa Pucangombo Tegalombo Pacitan.
- [15] IHYA'ULUMUDDIN M. Hubungan Pola Asuh Orangtua Dengan Perkembangan Motorik Anak Usia 3-5 Tahun di Paud Aisyiyah Nur'aini Ngampilan Yogyakarta.
- [16] Sari EK. Peningkatan Perkembangan Motorik Halus Anak Melalui Kegiatan Kolase dari Bahan Bekas di Taman Kanak-Kanak Aisyiyah. *J Ilm Pesona PAUD*; 1.
- [17] Suhono S, Utama F. Keteladanan Orang Tua dan Guru dalam Pertumbuhan dan Perkembangan Anak Usia Dini. *Elem J Ilm Pendidik Dasar* 2017; 3: 107–119.
- [18] Rohmawati W, Rahmawati NA. Pengaruh tipe pola asuh ibu terhadap pertumbuhan balita di posyandu Srijaya Desa Pucang Miliran Kecamatan Tulung Kabupaten Klaten. *INVOLUSI J Ilmu Kebidanan (Journal Midwifery Sci)*; 2.
- [19] Cempaka I, Naviati E. HUBUNGAN STIMULASI PERKEMBANGAN TERHADAP

PERKEMBANGAN ANAK USIA 0-5 TAHUN DI RW 8 KELURAHAN KALICARI KOTA SEMARANG.

- [20] Reurings M, Vossenaar M, Doak CM, et al. Stunting rates in infants and toddlers born in metropolitan Quetzaltenango, Guatemala. *Nutrition* 2013; 29: 655–660.
- [21] Firdaus ND, Ichsan B, Med M. Hubungan Tingkat Pendapatan Keluarga, Tingkat Pengetahuan Ibu tentang Stimulasi Perkembangan Anak, dan Tingkat Pendidikan Ibu dengan Perkembangan Sosial Anak Balita di Kota Madiun.
- [22] Ulfah E, Rahayuningsih SE, Herman H, et al. Asuhan nutrisi dan stimulasi dengan status pertumbuhan dan perkembangan balita usia 12–36 bulan. *GMHC* 2018; 6: 12–20.
- [23] Sukamti SS, Aticeh AA, Fauziah FF. STIMULASI DINI PADA POLA ASUH BERDAMPAK POSITIF TERHADAP PERKEMBANGAN ANAK BAWAH DUA TAHUN. *J Ilmu Dan Teknol Kesehat* 2014; 2: 27–35.
- [24] Hati FS, Lestari P. Pengaruh pemberian stimulasi pada perkembangan anak usia 12-36 bulan di Kecamatan Sedayu, Bantul. *J Ners dan kebidanan Indones* 2016; 4: 44–48.