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Analysis of parents' factors in providing developmental stimulation among pre-school age children in Pakis Sub-District, Malang, East Java

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ABSTRACT

Background and purpose: Lack of stimulation can cause deviations in child development and even permanent disturbances. The purpose of the study is to determine parenting factors in providing developmental stimulation in pre-school age children in Pakis Sub-District, Malang City, East Java.

Methods: This was a cross-sectional study of 120 mothers who have pre-school age children in Curah Ampel Village, Pakis Sub-District, Malang, conducted from September-November 2018. Data were collected with self-administered questionnaire. The questionnaire consists of mothers' demographic characteristics (age, education, and employment), father's involvement, knowledge about development stimulation, parenting style, and parental stimulation. Data analysis were including univariable, bivariable, and multivariable analysis conducted with STATA.

Results: On average, mother's age was 30 years old, 70.0% with low education, and 83.3% were unemployed. This study found that 55% of parents provide stimulation development that falls in the poor categories. From the result of multivariable analysis with logistic regression, it was found that mother's education associated with parental stimulation to pre-school age children (OR=0.322, 95%CI: 0.121-0.858, p=0.023).

Conclusions: This study highlights that mother's educational background has an important role in providing parental stimulation. Poor parental stimulation can cause developmental delays. A parenting program is needed to develop the knowledge and the ability of parents in accompanying every phase of their child development.

Keywords: parents' factors, developmental stimulation, pre-school age children

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INTRODUCTION

Children who are healthy, intelligent, attractive, and noble are the desires of every parent. The quality of a child can be assessed from the process of growth and development. Growth and development spurt occurs by starting the functioning of the organs of the body, increasing the nervous system, advancing motor development, and functioning excretory system that occur at an early age, namely from 0 to 5 years. At this time, a child in addition to experiencing rapid physical growth also found a high level of brain ability important for the learning process and enrichment of the development of intelligence, motor skills, and emotional social.¹ This period is often referred to

as the 'Golden Age' period. During the golden age period, it is important to pay attention to the growth and development of children carefully, so any abnormalities in children can be detected as early as possible. Large numbers of children in developing countries are exposed to multiple risk factors in the early years of life including poor health, malnutrition and low levels of home stimulation.²

One way to optimize child development is to monitor development using a developmental pre-screening questionnaire. This questionnaire is an instrument prepared by the Indonesian Ministry of Health containing 9-10 questions about the developmental abilities that children should have achieved according to their age groups. Every child

should receive growth and development monitoring from trained medical personnel regularly, to detect and prevent any advanced developmental disorders that are difficult to treat.³ If the child has developmental delays or disorders, further monitoring can be done and the need for further intervention can be determined. This also encourages parents to provide developmental stimulation to children according to their age.⁴

The prevalence of developmental deviations in children under 5 years of age in Indonesia as reported by World Health Organization (WHO) in 2016 was 7,512.6 per 100,000 population (7.51%).⁵ Approximately 5-10% of children are estimated to have developmental delays. The data on the incidence of general

developmental delays are not certainly known, but it is estimated that about 1-3% of children under 5 years of age experience general developmental delays.⁶ The detection of growth and development in East Java in 2009 was 64.03%, decreasing to 63.48% in 2010, and in 2011 the coverage increased to 69%, but still below the 80% target.⁷ Based on 2009 data, it is known that 35.97% of children have developmental delays.⁸ The coverage of child development checks in 2010 in Malang was 76.34% (188,412 of 246,806 targets), in 2011 it was increased to 88.51% (146,204 of 165,188 targets), in 2012 it was decreased to 84.16% (142,152 of 168,897 targets) and in 2013 increased to 84.97% (141,048 of 166,001 targets).⁹ This shows that the coverage of child development checks in Malang was better than that of province level but it is below the city target which was set at 90%.

Various efforts have been made by the government to optimize growth and development in pre-school age, one of which is outlined on the Minister of Health Regulation No. 25/2014 concerning Child Health Efforts and Minister of Health Regulation No. 66/2014 which states that growth and development monitoring is part of health service activities carried out for infants, toddlers and preschool children aimed at improving the survival and quality of life of children.¹⁰ Besides, providing education to parents about the importance of monitoring growth and development and early stimulation has been carried out, but not all parents provide early stimulation for growth and development.

The low coverage of child development checks causes parents not to know whether the child's development is according to their age. Meanwhile parents play a very important role in providing stimulation. Lack of stimulation can cause irregularities in child development, even persistent disturbances. Parents can immediately recognize the abnormalities of their child development process as early as possible and provide a stimulus for overall growth and development in physical, mental, and social aspects. Comprehensive and quality stimulation of children's development is needed to achieve optimal growth and development.¹¹

Parents' care factors play an important role in providing a strong foundation for children to develop optimally. By providing repeated stimulation, carried out regularly and the bond that develops between the child and the parents allows the child to internalize and generalize their learning to new experiences.¹² This sensitive support encourages continued involvement of children in learning activities with their parents to optimize children's growth and development.¹⁰

Previous research in Pakis Sub-District, Malang showed that 20 out of 30 parents were unable to stimulate children's growth and development.¹³ Most of the previous studies only explored qualitatively and quantitatively on how to provide developmental stimulation in children. Previous studies only explored partially, such as only explored maternal factor in providing stimulation development in pre-school age children. This study aims to analyze parents' care factors in providing development stimulation in pre-school age children in Pakis Sub-District, Malang.

METHODS

A cross-sectional study was conducted with 120 mothers of pre-school age children in Curah Ampel Village, Pakis Sub-District, Malang. Data were collected from September to November 2018. The sampling technique used in this study was simple random sampling. The inclusion criteria for the subjects were mother who have pre-school age children. Those who refused to participate, did not sign the informed consent, did not complete the questionnaires, and unable to communicate properly were excluded from the study.

The study was performed by the main researcher (HM) and two trained research assistants. A brief introduction of the study was explained to the respondents, and a signed informed consent was obtained from all respondents before the study. There was one instrument, a questionnaire, used in this study, including mother's demographic, father's involvement, parenting style, knowledge of mother about stimulation, and parental stimulation. The data were collected through self-administered questionnaires and were assisted with interviews

when necessary. The demographic questionnaire identifies age, education level, and employment. The questionnaire about knowledge of mother regarding stimulation consists of 10 items, which each item was scored 0 (false answer) dan 1 (right answer). We categorized the knowledge of mother about stimulation into two categories: good knowledge if the total score is ≥ 80 and poor knowledge if the total score is < 80 .

The questionnaire about father's involvement, parenting style and parental stimulation developed by the researcher and used Likert Scale. Father's involvement is defined as the father's participation in providing stimulation for the child. The questionnaire about father's involvement consists of 13 favorable and unfavorable items, each item was scored 0 (never) to 2 (always, or all of the time). We categorized the father's involvement into two categories: high involvement if the total score is ≥ 50 and low involvement if the total score is < 50 .

Parenting style is defined as the behavior of parents in representing the respond and make demands on their children. The questionnaire about parenting style consists of 13 favorable and unfavorable items, each item was scored 0 (never) to 2 (always, or all of the time). We categorized the parenting style into two categories: good parenting if the total score is ≥ 50 and poor parenting if the total score is < 50 .

Parental stimulation is defined as an activity that stimulates the ability of children aged 2-5 years carried out by parents so that children develop optimally, including motoric, language and personal social aspects. The questionnaire about parental stimulation consists of 13 favorable and unfavorable items, each item was scored 0 (never) to 3 (always, or all of the time). We categorized the parental stimulation into two categories: good stimulation if the total score is ≥ 50 and poor stimulation if the total score is < 50 .

Data analysis, including univariable, bivariable (chi-square), and multivariable (logistic regression) analysis, was conducted using STATA 12.0. Multivariate analysis was conducted for all variables that have a p value < 0.25 based on the results of bivariable analysis. This research has obtained an ethical approval from

The Ethics Commission of Poltekkes Kemenkes Malang with No: 531/KEPK-POLKESMA/2018 on August 09th 2018.

RESULTS

Table 1 shows the characteristics of respondents including mother's age, mother's education, mother's employment, father's age, father's education, and father's employment. The respondents' age ranged from 20 to 42 years old, with an average of 30 years old, 70.0% with low education, and 83.3% were unemployed. Father's age ranged from 20 to 49 years old, with an average of 35 years old, 70.8% with low education, and 72.5% worked as private employees.

Table 2 shows more than half of fathers have high involvement in providing stimulation (55.0%), while the knowledge of mothers about stimulation was poor (60.0%), parenting style of parents was good (53.3%), and parental stimulation was poor (55.0%).

Table 3 illustrates the distribution of parental stimulation by respondents' characteristics, father's involvement, knowledge, and parenting style. About 53.6% mothers with age <30 years old have poor stimulation and 56.3% mothers with age ≥30 years old have poor stimulation. Almost half mothers (46.4%) with low education have poor stimulation and most mothers (75%) with high education have poor stimulation. Unemployed mothers have poor stimulation (56%). More than half fathers (61.4%) with age <35 years old have poor stimulation and almost half fathers (49.2%) with age ≥35 years old have a poor stimulation. About 50.6% fathers with low education have poor stimulation and 65.7% fathers with high education have poor stimulation. Almost half fathers (48.1%) who involved in providing stimulation in low category have poor stimulation and 60.6% in high father's involvement have poor stimulation. Half mothers (50%) with poor knowledge about stimulation have poor stimulation and 62.5% mothers with good knowledge have poor stimulation. The proportion of those with poor parenting style who have poor stimulation is almost the same as the proportion of those with good parenting style which are 57.1% and 53.1% respectively. The bivariable analysis

Table 1. Characteristics of respondents

Characteristics	n	%
Mother's age (years)		
Range 20-40 years old		
<30	56	46.7
≥30	64	53.3
Mother's education		
Low (Elementary-Junior high school)	84	70.0
High (Senior high school-Diploma/Bachelor)	36	30.0
Mother's employment		
Unemployed	100	83.3
Employed	20	16.7
Father's age (years)		
Range 20-49 years old		
<35	57	47.5
≥35	63	52.5
Father's education		
Low (Elementary-Junior high school)	85	70.8
High (Senior high school-Diploma/Bachelor)	35	29.2
Father's employment		
Private employee	87	72.5
Self employed	21	17.5
Others	12	10.0

Table 2. Distribution of father's involvement, knowledge, parenting style, and parental stimulation

Variables	n	%
Father's involvement		
Low	54	45.0
High	66	55.0
Knowledge		
Poor	72	60.0
Good	48	40.0
Parenting style		
Poor	56	46.7
Good	64	53.3
Parental stimulation		
Poor	66	55.0
Good	54	45.0

shows that parental stimulation is related to mother's education (OR=0.289, 95% CI: 0.121-0.688).

Based on the results of bivariable analysis, all variables which had p value <0.25 were included in multivariable analysis. Based on Table 3, it was found that the variables to be included in the model were variables of mother's education, father's age, father's education, father's involvement dan knowledge.

Table 4 shows the relationship between mother's education and parental stimulation (OR=0.322, 95% CI: 0.121-

0.858). The result of the goodness of fit shows p-value=0.740, which indicates that the data is fit with the existing model. Besides, the result of R square 0.114 shows that 11.4% of parental stimulation is explained by mother's education, father's age, father's education, involvement and knowledge.

DISCUSSION

Parents have an important role in providing development stimulation in pre-school-age children. This study

Table 3. Distribution of parental stimulation by respondents' characteristics

Characteristics	Parental Stimulation		p*	OR (95%CI)
	Poor	Good		
Mother's age (years)			0.769	0.897
	<30	30 (53.6)	26 (46.4)	(0.436-1.845)
	≥30	36 (56.3)	28 (43.7)	
Mother's education			0.005	0.289
	Low (Elementary-Junior high school)	39 (46.4)	45 (53.6)	(0.121-0.688)
	High (Senior high school-Diploma/ Bachelor)	27 (75)	9 (25)	
Mother's employment			0.623	1.273
	Unemployed	56 (56)	44 (44)	(0.487-3.328)
	Employed	10 (50)	10 (50)	
Father's age (years)			0.181	1.642
	<35	35 (61.4)	22 (38.6)	(0.794-3.397)
	≥35	31 (49.2)	32 (50.8)	
Father's education			0.133	0.534
	Low (Elementary-Junior high school)	43 (50.6)	42 (49.4)	(0.236-1.210)
	High (Senior high school-Diploma/ Bachelor)	23 (65.7)	12 (34.3)	
Father's involvement			0.174	1.657
	Low	26 (48.1)	28 (51.9)	(0.801-3.428)
	High	40 (60.6)	26 (39.4)	
Knowledge			0.179	1.667
	Poor	36 (50)	36 (50)	(0.791-3.510)
	Good	30 (62.5)	18 (37.5)	
Parenting style			0.659	0.850
	Poor	32 (57.1)	24 (42.9)	(0.413-1.750)
	Good	34 (53.1)	30 (46.9)	

*Chi-square test

Table 4. Adjusted OR of factors related to parental stimulation in Pakis Sub-District, Malang

Variables	p	OR (95%CI)
Mother's education	0.023	0.322 (0.121-0.858)
Father's age	0.729	1.152 (0.518-2.559)
Father's education	0.893	1.070 (0.400-2.866)
Father's involvement	0.460	1.351 (0.608-3.005)
Knowledge	0.290	1.535 (0.694-3.399)

found that more than half of the parental stimulation in this population was in a low category (55%), especially in the aspect of language and personal-social. Based on research by Cuartas et al¹⁴ it was shown that the stimulation provided by parents is related to some cognitive processes in children including language development, motor function, and also socio-emotional development such as perseverance in children, their learning motivation, and also how children behave in a social environment.

Good parental stimulation is commonly seen in mothers with low

education (63.5%) and poor parental stimulation is commonly seen in mothers with high education (75%). In crosstab analysis between mother's employment and mother's education, shows that 85.71% of mothers who have low education are unemployed. Concerning maternal education, this is in line with the research of Barros et al.¹⁵ which shows the effect of stimulation is much better in mothers with low education. This effect is not only the results of merely providing stimulation but giving an effective stimulation so that the child can achieve optimal developmental results. In addition, mothers who do not

work have the opportunity to interact more with their children, this has been shown to stimulate development in children much better.

Parents' education, especially mothers, is one of the indicators associated with parenting in various fields, both growth, and development. This also relates to the interaction between mother and child, the development stimulation provided, the education instilled in the child, and the time spent by the mother with the child. Mothers with higher education tend to have little time and often leave their children in child care, but for mothers with lower education, the free time they have will be considered as the right time to stimulate future investments in their children to improve their growth and development.¹⁶ Even though these explanations are plausible, future studies should examine the gaps in this study.

According to Bianchi and Robinson (1997) in Kalil, Ryan and Corey¹⁶ said that the level of parental education in terms of the amount of time spent with children

is evidence that parental education is a major predictor of children's growth and development, especially their social behavior. That way, mothers with higher education have less opportunity to stimulate growth and development in their children compared to mothers with less education. However, it is different from the results of previous study which shows that lower levels of child development are found among parents who have lower education and limited vocabulary or language development, this is because children receive less stimulation from their less-educated parents. This study also showed that every one year increase in education in mothers affected increasing language development by 0.0038 times and numeracy skills by 0.0024 times compared to mothers whose education was lower.¹⁷

In this study, although low education in mothers was proven to have a significant effect on providing good stimulation to children by 0.29 times compared to mothers with higher education, mothers who did not work in the cross table analysis showed no relationship to the stimulation given. Parenting is multidimensional. To respond to the varied needs of their children, parents must develop both depth and breadth of knowledge, ranging from being aware of developmental milestones.¹⁸ The focus on parental knowledge as a point of intervention is important because parents' knowledge of child development is related to their practices and behaviors.¹⁸ Good knowledge is supported by the level of education, if someone has a high level of education following his/her competence, it will make them easier to embrace the information,¹⁹ especially in improving the quality of providing stimulation development to children according to their age.

Child development is multi-dimensional and includes the cognitive-language, sensory-motor, and socio-emotional domains, all of which are interrelated. The early years provide a critical window of opportunity but also present the risk of vulnerability when neglected. Although much of the previous literature reveals important cognitive aspects in early childhood for further development, currently many studies reveal the importance of sensory-

motor and socio-emotional aspects in academic achievement, productivity, and social functioning of children in adulthood.² Children are also intrinsically motivated to learn and will use resources in their surroundings to increase their understanding of the world. According to social learning theories, observation and imitation are important learning mechanisms for children. Children actively participate in their social environment and learn social behaviors by watching other people perform actions and by subsequently imitating these actions.²⁰

Children do not learn fundamental skills naturally but have to be stimulated in their physical development. When children do not be stimulated in early childhood these children might never gain full proficiency in certain physical activities in adolescence or adulthood. Children are stimulated to explore their own identity and to experience different social roles. As a result, their self-confidence is boosted and they are well aware of and respect their environment.²⁰ The early childhood years are crucial in the development of intelligence, personality and social behavior. By providing children with early stimulation a range of development problems are avoided or reduced, and it brings lasting benefits to individuals and society.

Parental stimulation for language development can be done by engaging children in activities that promote learning and by offering language-rich environments to their children. Parental stimulation in the home was most strongly related to academic achievement over time.²¹ Children have a play time as the way for learning time. Parents at home have a role as educator to provide stimulation developments. Parents have the influencing power to determine a child's chances for survival and development. Rapid strides made by pre-school age children across all domains of development are supported through parents' practices, attitudes, knowledge and resources. Parental stimulation is one way in which parents invest financial and social resources in their children.²² The multi-disciplinary and transnational literature on parenting clearly indicates that parents are one of the most influential

factors in children's development.¹¹ Parents play the primary role in providing a strong foundation for their child's future development. A systematic review study found that intervention in stimulation should be done to increase the success of child development, that the provision of appropriate stimulation which is carried out continuously, i.e. done every week, shows better development compared to giving stimulation every two weeks or months.²

This study found a significant relationship between mother's education and parental stimulation. This result was similar to a previous study that even after controlling for the quality and quantity of care children receive outside the home and family background variables, maternal education is the strongest predictors of children's cognitive and socio-emotional development and their academic performance.²³ Others study shows maternal education is the most strongly associated with children's cognitive development and is a key predictor of other resources within the family that strongly predict children's well-being: economic insecurity, family structure, and maternal depression.²⁴

This research shows that low cognitive development is found in children who receive less psychosocial stimulation from parents. In addition, the education of a mother plays an important role in the cognitive development of the child, where the improvement of the mother's education has an impact on the increase in the average cognitive-developmental score of the children, thereby enabling the child to better understand various objects. Mothers with higher education will be more open to new things, besides that mothers are also easier to get information related to children's growth and development compared to mothers with low education.²⁵

Parenting is carried out by parents, especially mothers. Mother is a family member who determines children growth, especially physical, social, and emotional, which depends on the quantity and quality of interaction between children and parents, the pattern of educating children, giving attention, and meeting the needs of these children. Education

plays important roles in the society. By having sufficient education someone will understand which one is good and able to make them beneficial for themselves as well as for others who need them. Educated parents usually have very high aspiration and expectation toward their children.²⁶ Parents will give direct support such as helping children achieve their developmental task. With the increase in maternal education, perceptions about child care education and efforts to optimize growth and development are becoming more important.²⁷

Educational interventions to improve parents' knowledge and practices related to parenting are needed, with focused on early stimulation development. Educational interventions also had the largest effect size on behavioral outcomes of mothers in providing stimulation development for pre-school age children.

There were some limitations in this study, including some questions were difficult to understand by respondents with basic education (elementary and junior high school) and several respondents also had difficulties in reading and writing.

CONCLUSIONS

This study reported 55% of parents provide stimulation development in the poor categories and found the relationship between mother's education and parental stimulation in Pakis Sub-District, Malang. Good parental stimulation tends to be observed in mothers with low education. Poor parental stimulation can cause developmental delays because pre-school children are still in their golden age, allowing children to develop more optimally. Parental stimulation should be considered as a means of detecting delays in child development. A parenting program is needed to develop the knowledge and the ability of parents in accompanying every phase of child development.

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AUTHOR CONTRIBUTION

HM and WS designed and conceptualized the study. HM collected the data and WS analyzed the data. HM and WS wrote the draft of manuscript.

CONFLICT OF INTEREST

No conflicts of interest declared by the authors.

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