The Relationship Between Parental Socio-Economic Status, Birthweight, and Development in Children Aged 1-5 Years in Surakarta

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ABSTRACT

Background: Health report by The Ministry of Health in 2006 revealed that 16% of children under five had mild to severe development problem. About 5-10% of children under five had mental retardation. The current study hypotesized that parental socio-economic status such as family income and maternal education affect child development. The purpose of this study was to analyze the relationshipbetween parental socio-economic status, birthweight, and development in children aged 1-5 years in Surakarta.
Subjects and Method: This was an analytic observational study with case control design. This study was conducted at Ngoresan Health Center, Surakarta, from December, 2016 to January, 2017. The study population was children under five living within the area of Ngoresan Health Center. A total of 100 children under five was selected by fixed disease sampling, consisting of 25 cases and 75 controls. The dependent variable was child development, measured by Ministry of Health's KPSP. The independent variables were family income, maternal education, and birthweight. The data were analyzed by chi-square and multiple logistic regression.
Results: There were positive and statistically signifcant relationships between maternal education ≥high school (OR= 1.61; 95% CI= 1.5 to 15.7; p= 0.046), family income ≥minimum regional wage (OR= 5.1; 95% CI= 1.1 to 22.8; p= 0.032), and normal birthweight (OR= 8.5; 95% CI= 2.4 to 30.1; p= 0.001) and child development.
Conclusion: There are positive relationships between high family income, high maternal education, normal birthweight, and normal development in children aged 1-5 years.

Keywords:parental socio-economic status, birthweight, child development

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BACKGROUND

The first 5-year period of child growth and development is often referred to as the golden age because at that time the physical condition and all the abilities of the child are developing rapidly. Growth and development at the age of toddlers arethe absolute requirement to achieve optimal health status (Hidayat, 2010; Soetjiningsih, 2014).

MOH (2006) states that 16% of the number of children under five developing developmental disorders starting from mild to severe and about 5-10% of children experience developmental delays. The socioeconomic status factors affecting the development of children aged 1-5 years are education and income (Hidayat, 2008).

Education is very important in the community life. Children who have educated parents, usually, their development will always be considered so that they have better development than children who have parents with low levels of education (Hidayat, 2008; Eryanto and Rika, 2013).

The parent's income level influences the development of parents to meet the

needs, selection of types and amounts of food, and affect the family's lifestyle which will also have an impact on children's development. The higher the income of parents, the better the development in children (Rowe, 2008; Octari, 2014; Muryanti, 2016).

2013 Riskesdas data states that the percentage of newborns by province in Indonesia is 85% with normal birth weight and 15% with abnormal birth weight (10.2% LBW and 4.8% LBW). Whereas in Central Java, there are 9.7% LBW, ranked 16th in Indonesia (Qobadiyah, 2012; Tazkiah, 2013; Ministry of health RI, 2014).

Birth weight is one of the key development factors in all aspects of development in determining and presenting future life expectancy and child health factors. Low birth weight can be associated with development, education, and adverse behavior in childhood, adolescence, and later (Amarnath, 2014; Zareien, 2014).

The most important phase in child development is during infancy and toddler. Children at the age of 1-5 years are golden age and in the development process, which means that they are at that age the cognitive, physical, motor, and psychosocial aspects of a child develop rapidly. In 2013 based on IDAI data, it is estimated that 5-10% of children experience developmental delays.

The coverage of Early Development of Early Growth in Surakarta is 79.26%. Data from the Surakarta City Health Office in 2015 showed that the number of children under five in Surakarta amount to 32,476 children and the number of children with the most growth and development problems were in the work area of the Ngoresan Health Center. The Ngoresan Health Center is one of the largest number of independent health centers in Surakarta, namely 37 posyandu and has 2,478 toddlers. The Ngoresan Health Center has implemented an early childhood development and early detection program, but the coverage is still very low at 1,429 out of 2,478 toddlers (57.67%). The implementation of early detection of growth and development at the Ngoresan Health Center only focuses on the growth screening (body weight, body height, head circumference, and nutritional status), while the development screening using screening instruments and diagnosis of child development was only carried out on toddlers suspected of having developmental delays.

The purpose of this study is to analyze the relationship between parents' socioeconomic status and the birth weight with the development of children aged 1-5 years in Surakarta.

SUBJECTS AND METHOD

This type of research is observational research with a case control approach. The study was conducted in August 2016-January 2017 in the work area of Ngoresan Surakarta Health Center. The variables in this study are socioeconomic status including maternal education and parent income, birth weight and child development. The study population was 2,478 children aged 1-5 years. The sampling technique used was fixed disease sampling, where a sample of 100 toddlers aged 1-5 years with 25 (cases) and 75 (controls). Child development data is measured by KPSP Ministry of Health. Data analysis using multiple logistic regression.

RESULTS

1. Sample characteristics

The results of the characteristics of the research subjects regarding the variables of maternal education, parent income, birth weight and development of children aged 1-

5 years are explained based on the characteristics, criteria, frequency, and percentage (%) shown in Table 1.

Table 1. Sample Characteristics

Characteristics	Cases		Control	
	n	%	n	%
Maternal Education				
High	8	32	49	65.3
Low	17	68	26	34.7
Parental Income				
High	6	24	42	56
Low	19	76	33	44
Birth Weight				
Normal	13	52	64	85.3
LBW	12	48	11	14.7

2. Multiple Logistic Regression Analysis

Table 2.Multiple Logistic Regression Analysis

Variables	OR	95% CI		p
		Lower Limit	Upper Limit	
Maternal Education ≥HS	1.61	1.5	15.7	0.046
Parental Income ≥MW	5.1	1.1	22.8	0.032
Birth Weight	8.5	2.4	30.1	0.001
N observation	100			
-2 log likelihood	89.25			
Nagelkerke R^2	60.7%			

Based on Table 2 above, it showed that there was a strong relationship between maternal education, parental income, and birth weight with the development of toddlers, and it was statistically significant.

DISCUSSIONS

1. The relationship between maternal education and child development

The result of this study was in accordance with a study done by Cerneiro et al.,(2011) which stated thatmaternal education played a significant role in children's cognitive and motor development, but it was not statistically significant. A study done by Apriatuti (2013) in Boyolali District showed that there was a significant result between maternal education and child's development (p=0.001).

Maternal education was one of the factors that affect the child's development. Parents who were highly educated would provide greater intellectual stimulation and created a home environment that encouraged and facilitated the development of their children. Mother was a primary caregiver for her child, there was a possibility that her level of education would have a strong impact on child's development (Sitoresmi, 2015).

Maternal education affected maternal knowledge in providing developmental stimulation to children. It also required a supportive attitude from parents such as parents must be able to receive information from outside that could affect children's development, to know a good parenting way for their children, and to stimulate children's development according to their age. This statement was in accordance with a theory of Soetjiningsih (2014) which revealed thatone of the factors that affect children's growth and development was

maternal education. By having good education, parents could receive all the informations from outside, especially good parenting methods and the proper ways to monitor child's development.

2. The relationship between parental income and child development

Parental income level was related to the development of parents to fulfill the needs, selection of types and amounts of food, and affected the family lifestyle that would also affect the children. Income would affect someone's social status, especially in materialist and traditional societies that appreciate high socioeconomic status. Families who have lack of income were less likely to fulfill their food needs, especially to fulfill the nutritional needs for their body which would affect the development of both motoric and language development (Prandy, 2013; Octari, 2014).

Income affected the child's development. Families with sufficient income would allow the parents to buy games as a means of stimulating children's development. The family also tend to send their children to early childhood education which make the children to indirectly interacted with the environment more frequently. Therefore, the stimulation of development would occur in both physical and verbal interactions (Freitas, 2013).

3. The relationship between birth weight and child development

The result of this studyshowed that there was a relationship between birth weight and child development which was statistically significant (p= 0.001), children with normal birth weight would have good development than children with low birth weight. This result supported a study done by Chaves (2015) which stated thatlow birth weight was considered as a strong risk factor for motor development delay.

This was in line with a study done by Nazi (2012) which stated that there was a significant differencebetweenthe group of infants with normal birth weight and LBW. This study showed that the skill of children with a LBW history tend to be inhibited. Low birth weight (LBW) babies have a higher risk for developmental deviations compared to normal birth weight babies. The risk of developmental irregularities in LBW was 2-5 times more often compared to normal birth weight (Gomella, 2008).

From the results of this study, it can be concluded that there was a relationship between socioeconomic status (maternal education, parental income) and birth weight with the development of toddlers.

It is expected that health personnels could provide Information and Education Communication (KIE) about children's development to cadres and the community on a regular basis. Health center was expected to provide counseling to mothers about child's development according to their age. Mothers and families are expected to nurture their children according to the growth and development's ages.

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