

## Effect of Family Income, Education, Occupation, and Birth Weight on Child Growth at Aisyiyah III Kindergarten, in Kadipiro, Indonesia

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### ABSTRACT

**Background:** Children under five years old are the future generation. Stages of child development during the golden period require stimulation to increase the potential of healthy children. As such the growth and development of children under five need serious attention. This study aimed to analyze the effect of family income, education, maternal occupation, and birth weight, on the development of children under five.

**Subjects and Method:** The study was observational analytic using cross sectional design. The study was conducted in Kindergarten of Aisyiyah III Kadipiro in May-June 2016. A total sample of 50 subjects was selected for this study. The independent variables were family income, education, maternal occupation, and birth weight. The dependent variable was child development. The data were analyzed using a multivariate linear regression model.

**Results:** Family income had a negative relationship with child development, but was not statistically significant (OR= 0.13; 95% CI <0.01 to 5.02; p= 0.274). Maternal education (OR= 22.22; 95% CI= 1.35 to 365.07; p= 0.030), occupation (OR= 96.18; 95% CI= 1.69 to 5644.84; p=0.027), and birth weight (OR= 32.21; 95% CI= 1.76 to 588.84; p= 0.019), had positive and statistically significant relationship with child development.

**Conclusion:** Maternal education, maternal occupation, and birth weight have positive effect on child development.

**Keywords:** family income, education, occupation, birth weight

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### BACKGROUND

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The quality of child development needs serious attention. Children under the age of five need to have good nutrition, as well as sufficient and affordable stimulation by health services including early detection and intervention on child growth impairment (Depkes, 2006).

The first five years of life is a very sensitive period towards the surrounding. This period lasts very short and can not be repeated. That is why this period is called "Golden Period", "Window of Opportunity", and "Critical Period". For those reasons,

children under the age of five need development stimulation (Depkes, 2006).

There are many factors that can affect child growth, such as genetic factor, surrounding area, culture, economic condition, education, social, climate or weather, nutrients, and many more. Genetic factor plays an important role in child growth and development. Gender, race, ethnic group, and cell growth speed are all included as genetic factors (Hidayat, 2008). Besides that, it is also affected by surrounding factors, namely biological, physical, psychological, and social surrounding (Mansur, 2009). KPSP

is used to measure the growth of children under five years of age, it is recommended by the Ministry of Health. KPSP or Pre-Screening Growth Questionnaire is one of the screening tools that must be used in primary level health services. KPSP is very easy to be used by health officers, even by kindergarten teachers, pre-school teachers, or parents to detect child growth impairment as early as 3 months old, so that an early intervention can be taken.

This study was aiming at : 1) analyzing the effect of family income on pre-school child growth in TK Aisyiyah III Kadipiro, 2) analyzing the effect of education on pre-school child growth in TK Aisyiyah III Kadipiro, 3) analyzing the effect of maternal occupation on pre-school child growth in TK Aisyiyah III Kadipiro, 4) analyzing the effect of birth weight on pre-school child growth in TK Aisyiyah III Kadipiro, and, 5) analyzing the effect of family income, education, maternal occupation, and birth weight on pre-school child growth in TK Aisyiyah III Kadipiro.

Family income is the amount of money a family get from stable income and side job of the breadwinner, mother, and other family members in a month divided by the number of family members as stated in rupiah per capita per month (Ernawati, 2006). According to Law No. 20 Year 2003 of the Republic of Indonesia, the level of formal education is structured and it consists of: 1. Primary education, 2. Secondary education, and 3. Higher education. Informal education consists of the education of one's family and the education from the community that take place naturally, while non-formal education is the education that take place outside formal education, and it can be carried out through different levels. It consists of courses, trainings, study groups, and community learning centers.

Women's empowerment education and others (Ahmadi, 2014).

Occupation or profession is an activity that one does to earn a living or to get remuneration to develop his potentials or skills in order to fulfil his needs. But there are occupations which are done for mutual interest and do not earn money, such as being a homemaker who takes care of the house and provides what the family needs (Widiantoro et al., 2007). A normal newborn baby is a baby that is born from aterm pregnancy (37-42 weeks) with the birth weight of 2500-4000 grams. Birth weight is the weight of the baby that is measured 1 hour after he was born.

Development is a result of the interaction of the central nervous system and the organs that it influences, for example the development of neuromuscular system, speech ability, emotion, and socialization. All of these functions are very important in the development of human as a whole (Depkes, 2006).

Growth is the increase structure in a regular pattern as a result of maturation process. It involves the body cell differentiation, body tissue, organs and organ systems which of a complex skill in body function and develop so that each can fulfil the functions, including emotional and intellectual, and behavioural development as a result of the interaction with the surrounding (Ngastiyah, 2005).

One of the ways to measure child growth is by using Pre-Screening Development Questionnaire or KPSP. It is a list of simple questions which is addressed to parents and it is used as a tool to do earlier growth screening of children as young as 3 months old until 6 years old. It has 10 questions to be asked to parents or babysitters in each of the age category.

**SUBJECTS AND METHOD**

The study was observational analytic using cross sectional design. The study was conducted in Kindergarten of Aisyiyah III Kadipiro in May-June 2016. A total sample of 50 subjects of pre-school students was selected for this study. Data collection instrument were questionnaire paper and KIA book. The data analysis was univariate, bivariate using *chi square* and multivariate with double linear regression model.

**RESULTS**

**A. Univariate Analysis**

**1. Subject characteristics**

Table 1 shows that as many as 30 (60%) from 50 subjects have high income, as many as 43 (86%) have high education, as many as 36 (72%) maternal occupation, and as many as 42 (84%) have children with normal birth weight.

**Table 1. Characteristic of subjects in Aisyiyah III Kindergarten Kadipiro**

Variables	n	%
<b>Family Income</b>		
High	30	60
Low	20	40
<b>Maternal Education</b>		
High	43	86
Low	7	14
<b>Maternal Occupation</b>		
Working	36	72
Not working	14	28
<b>Birth weight</b>		
Normal	42	84
BBLR	8	16
<b>Child development</b>		
Appropriate	42	84
Inappropriate	8	16

**B. Bivariate Analysis**

**1. The relationship of family income with pre-school child development**

The study shows that family with high income has possibility of having children with

appropriate growth suitable with the age compared to family that has low income. Statistical Analysis shows that there is a positive relationship between family income and pre-school child development as much as  $p=0.027$ .

**2. The relationship of maternal education with pre-school child development**

Study shows that mothers with high education have the possibility of having children with the appropriate development suitable with the age compared to mothers with low education. Statistical analysis shows that there is a positive relationship between maternal education and pre-school child development, as much as  $p=0.001$ .

**3. The relationship of maternal occupation with pre-school child development**

The study shows that mothers who are working are most likely to have children with appropriate development suitable with the age compared to mothers who are not working. Statistical analysis shows that there is a positive relationship between maternal occupation with pre-school child development, as much as  $p=0.001$ .

**4. The relationship of maternal education with pre-school child development**

The result shows that normal birth weight has higher possibilities to make child development suitable with the age compared to abnormal birth weight. Statistical analysis shows that there is a positive relationship between birth weight with pre-school child development ( $p=0.004$ ).

Based on table 2, the result of multivariate analysis shows that there is a significant relationship among education, maternal occupation, and birth weight with pre-school child development.

**Table 2. Logistic regression analysis of the effect of family income, education, maternal occupation, and birth weight**

Variable	OR	CI 95%		P
		Lower limit	Upper limit	
Family income	0.13	0.003	5.02	0.274
Normal birth weight ( $\geq 2,500$ g)	32.21	1.76	588.84	0.019
Maternal education ( $\geq$ Senior High School)	22.22	1.35	365.07	0.030
Maternal occupation (working)	96.18	1.69	5466.84	0.027
N observation	50			
-2 log likelihood	22.05			
Nagelkerke R <sup>2</sup>	60.7%			

Mothers with higher education (SHS and university) have the chance of 22.22 higher to have children with appropriate development suitable with the age compared to mothers with lower education (JHS and elementary school).

The analysis shows that there is a relationship between maternal occupation with child development and it is statistically significant (OR= 96.18; 95% CI= 1.69 to 5644.84; p= 0.027). The analytical result it is statistically significant (OR=96.18; 95% CI= 1.69 to 5644.84; p= 0.027).

There is a negative relationship between family income with child development and it is not statistically significant (OR=0.13; 95% CI <0.01 to 5.02; p= 0.274). shows that mothers who are working have the chance of 96.18 higher of having children with appropriate development suitable to the age compared to mothers who are not working.

The result from Wald test shows that there is a relationship between family income with child development and it is not statistically significant (OR= 0.13; 95% CI <0.01 to 5.02; p= 0.274). Mothers with low family income have the chance of 0.13 higher of having children with appropriate development according to the age compared to mothers with higher family income.

The result from Wald test shows that there is a birth weight relationship with

child development and it is statistically significant (OR=32.21; 95% CI= 1.76 to 588.84; p=0.019). Children with normal birth weight have the possibility of 32.21 higher to have children with development appropriate to the age compared to children with abnormal birth weight.

The Nagelkerke R<sup>2</sup> as much as 60.7% means that the four independent variables (maternal education, maternal occupation, birth weight, and family income) can explain child development suitable to the age as much as 60.7% and the rest, 39.30%, is explained by other factors.

## DISCUSSION

### 1. The effect of family income on pre-school child development

The result of the study shows that there is a negative effect between family income and child development and it is not statistically significant. It means that if the family income is better, it does not always increase child development. This is caused by the daily buying, if it is not suitable with the nutrients needed for children, then it will cause inappropriate child development based on the age.

This finding is supported by a study from Raffalovich, Monnat, and Tsao (2009), that family income is one of the factors that support the growth and development of children. Low family income is always relat-

ed to lack of food, bad health environment that will hinder the growth and development of children. Besides that, low income results in low purchasing power, including purchasing power for food, either in quality or in quantity that have impact on family nutritional needs. The effect of education on pre-school child development.

The result of the study shows that there is a relationship between maternal education and child development and it is statistically significant  $p= 0.030$ , whereas the higher maternal education, the more information she has on how to educate children, thus child development is suitable with the age. This statement is in accordance with Ali (2009), the higher one's education is, the more skills and abilities that person has. These skills and abilities may not be owned by everyone.

A mother's role plays an important part in the growth and development of a child. A mother is fully responsible for taking care of her children and stimulating their growth. Therefore, maternal education is very related with child development (Lestari, 2012). Maternal education is closely related to her knowledge. A mother who has higher education will make more efforts to find information to increase her knowledge and skills that she has, especially on how to take care of her children. Parents with higher education comprehend knowledge/ information better.

### **2. The effect of maternal occupation on pre-school child development**

The result of the study shows that mothers who are working are able to fulfil needs for living, increase income, and gain a decent living and the family prosperity will also increase. When family prosperity is achieved, then her life will be peaceful and comfortable, and this will give good impact to appropriate child development suitable with the age. The results of the study is in

line with the study that was conducted by Suhardjo (2010), that mothers who are working will complete information, especially on how to stimulate the children development.

### **3. The effect of birth weight on pre-school child development**

The result of the study shows that if a baby is born with normal birth weight it will increase child development. This is in line with the study that was conducted by Muscari (2005) that says there are differentiation process that take place in the cell, tissue, organs, and organ system that each of which is developed to fulfill its needs.

Based on this study, it can be concluded that there is a positive relationship between maternal education and child development, and it is statistically significant (OR= 22.22; 95% CI=1.35 to 365.07;  $p= 0.030$ ).

There is a positive relationship between maternal occupation with child development and it is statistically significant (OR= 96.18; 95% CI= 1.69 to 5644.84;  $p= 0.027$ ).

There is a negative relationship between family income with child development and it is not statistically significant (OR=0.13; 95% CI= 0.003 to 5.02;  $p= 0.274$ ).

There is a positive relationship between birth weight with child development and it is statistically significant (OR=32.21; 95% CI= 1.76 to 588.84;  $p= 0.019$ ).

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