

# The Influence of Exclusive Breastfeeding to Emotional Development of Children Aged 48-60 Months

## Pengaruh Pemberian ASI Eksklusif terhadap Perkembangan Emosi Anak Usia 48-60 Bulan

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Yuni Kusmiyati\*, Sumarah\*, Nurul Dwiawati\*, Hesty Widyasih\*, Yani Widyastuti\*, Khadizah Haji Abdul Mumin\*\*

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\*Department of Midwifery, Yogyakarta Health Polytechnic of Health Ministry, Yogyakarta, Indonesia, \*\*Institute of Health Sciences, Universiti Brunei Darussalam, Brunei Darussalam

### Abstract

Impaired emotional development is a problem faced by children and this can negatively impact on function, development and readiness of their school. Exclusive breastfeeding can meet brain development needs that affect child development. This study aimed to determine correlation between exclusive breastfeeding and emotional development of children aged 48-60 months. This study used historical cohort. The subjects of this study were 7-12-month old infants living in area of Borobudur Primary Health, Central Java Province, Indonesia in 2011-2012. Independent variable of exclusive breastfeeding was when infants received only breast milk without any supplementary food or drink including water since birth until the age of 6 months. Data were obtained from medical records of children. The emotional development was assessed directly by using questionnaires on emotional and mental problems. Data analysis used cox regression. This study found that provision of exclusive breast feeding was evidently correlated with the child's emotional development. Infants who did not receive exclusive breastfeeding had 2.96 higher risk of having abnormal emotional development than infants who received exclusive breastfeeding. Exclusive breastfeeding greatly influences emotional development of the children.

**Keywords:** Children aged 48-60 months, emotional development, exclusive breastfeeding

### Abstrak

Gangguan perkembangan emosional adalah masalah yang dihadapi anak-anak dan hal ini dapat berdampak negatif terhadap fungsi, perkembangan dan kesiapan sekolah mereka. Pemberian ASI eksklusif mampu memenuhi kebutuhan perkembangan otak yang memengaruhi perkembangan anak. Penelitian ini bertujuan untuk mengetahui hubungan antara pemberian ASI eksklusif dan perkembangan emosional anak usia 48-60 bulan. Penelitian ini menggunakan kohort historis. Subyek penelitian adalah bayi berusia 7-12 bulan yang tinggal di wilayah Puskesmas Borobudur, Provinsi Jawa Tengah, Indonesia tahun 2011-2012. Variabel bebas pemberian ASI eksklusif adalah saat bayi hanya menerima ASI tanpa tambahan makanan atau minuman termasuk air sejak lahir sampai usia 6 bulan. Data diperoleh dari rekam medis anak. Perkembangan emosional dinilai langsung dengan menggunakan kuesioner mengenai masalah kejiwaan dan emosional. Analisis data dilakukan dengan menggunakan *cox regression*. Penelitian ini menemukan bahwa pemberian ASI eksklusif terbukti berkorelasi dengan perkembangan emosional anak. Bayi yang tidak mendapatkan ASI eksklusif memiliki risiko lebih tinggi 2,96 kali mengalami perkembangan emosional abnormal dibandingkan bayi yang mendapatkan ASI eksklusif. ASI eksklusif berpengaruh besar terhadap perkembangan anak.

**Kata kunci:** Anak usia 48-60 bulan, perkembangan emosi, ASI eksklusif

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**Correspondence:** Yuni Kusmiyati, Department of Midwifery Yogyakarta Health Polytechnic of Health Ministry, Mangkuduyan Street MJ III/304, Yogyakarta, Indonesia, Phone: +62274-374331, E-mail: yuni\_kusmiyati@yahoo.co.id  
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## Introduction

Development refers to the process of maturity interaction between central nervous system and organs by which greatly affected, such as neuromuscular system, speaking ability, emotion and socialization.<sup>1</sup> Early age is 'golden age period', and it refers to a golden age for the human development aspect including physical, cognitive, emotional and social development. One of most important child development is emotional aspect.<sup>2</sup> With their emotional state, children can focus their attention, energize their body, and organize their thought to deal with their needs.<sup>3</sup> World Health Organization (WHO) study in 2001 showed that 20% of children until the age of adolescents were suffering from mental disorders. Based on 2013 National Basic Health Research using Self-Reporting Questionnaire (SRQ) to assess mental health of population, the prevalence of emotional mental disorders in Indonesian population aged over 15 years was at 6.0%.<sup>4</sup>

Emotional and behavioral problems are influenced by multiple factors which can stand alone or affect each other. The provision of adequate stimulation and nutrition as the basis of child development must be optimal.<sup>2</sup> One of good nutrition for an optimal fulfillment is exclusive breastfeeding provided to infants from 0 to 6 months.<sup>5</sup> According to Lind *et al.*,<sup>6</sup> breastfeeding heightens interaction between mother and infant. Breastfeeding improves the mother- and child interaction which is important for cognitive and socio-emotional development of the infants.<sup>7</sup>

Based on data from 2013 National Basic Health Research, there was a decrease in exclusive breastfeeding (0-6 months) for infants as the age increases. Prevalence of exclusive breastfeeding in infants aged 0 month was 52.7%, 1 month at 48.7%, 2 months at 46%, 3 months at 42.2%, 4 months at 41.9%, 5 months at 36.6%, and infants aged 6 months at 30.2%.<sup>8</sup> Studies showed that coverage of exclusive breastfeeding rate in Indonesia was very low.<sup>9</sup> Scope of exclusive breastfeeding in Central Java in 2014 reached 60.7%, while Borobudur Primary Health Care in Central Java reached 79%.<sup>10,11</sup> According to data from Health Research Association in 2013, the prevalence of mental and emotional disorder in Indonesia reached 6%, while Central Java reached the prevalence at 4.7%. Based on a preliminary study in Borobudur Primary Health Care in 2015, the number of children who joined the emotional examination by using a questionnaire of emotional and mental problems was 246 children aged 3-6 years in which 46 of 246 children (18.7%) suffered from emotional distress, and 12 children (26%) got services in advanced health facilities.

The aim of this study was to determine effect of exclusive breastfeeding to emotional development of 48-60

month-old children in Borobudur Primary Health Care in 2016. This study can be useful for decision-making basis on exclusive breastfeeding and early detection of developmental disorders in children, especially in the emotional development of all children.

## Method

This study is observational studies with a historical cohort design. Study subjects included 369 children in the range of 7-12 months of age. The study coverage was in Borobudur Primary Health Care, Central Java in 2011-2012. As many as 196 children received exclusive breastfeeding, and 173 children did not receive exclusive breastfeeding. Sampling was conducted with simple random sampling technique for subjects who met the inclusion criteria that were willing to be the subject of study, and living in the coverage of Borobudur Primary Health Care. The exclusion criteria were children suffering from chronic pain for the past one month and congenital disability. The sample size was calculated based on the formula of samples for the study cohort with a power of 90%, and the samples obtained were 178 children (89 children who received exclusive breastfeeding versus 89 children who did not receive exclusive breastfeeding).

The independent variable was provision of exclusive breastfeeding without any additional food or drink, including water, except for medicine, vitamins, and minerals provided to infants within the range from 0 to 6 months of age. Data were obtained from medical records of children in Borobudur Primary Health Care, Central Java. The dependent variable of child emotional development was a process of maturation of organs, including interaction of developing mental/intelligence and physiological and psychological behaviour of children. This skill is used to respond to the surrounding environment, and it was assessed by using a questionnaire of emotional and mental problems. External variables studied were sex, maternal education, father's education, maternal employment status, father's employment status, and the parents' income. The study was conducted in 2016. Data were analyzed by using chi-square test and cox regression for multivariate analysis. Cox regression for odds ratio (OR) was applied to assess the association between exposure and outcome in logistic regression, which is considered the same as risk ratio (RR) in cohort studies, that can lead to overestimates. Use of OR was acceptable if the results were relatively rare (<10%). Therefore, cox regression was recommended as a suitable method to estimate the RR cohort study using multivariate time constant (number 1).<sup>11</sup> Multivariate analysis was performed on variables with p value < 0.250. Model was fit if the model significance was 0.05 and partial significance was 0.1.

**Results**

This study was conducted in Borobudur Primary Health Care, Central Java in 2016. The total sample of 178 respondents consisted of 89 children who received exclusive breastfeeding and 89 children who did not receive exclusive breastfeeding. The main independent variable was exclusive breastfeeding, and dependent variable was emotional development of children and external variables included sex, maternal education, father’s education, parents’ employment status, and parents’ income. Table 1 presents the results of analysis on description of subjects’ characteristics and the effect on emotional development.

Table 1 shows that characteristics of variables related to the emotional development were maternal education, father’s education, father’s employment status, and parents’ income (p value < 0.05). The boys had 1.8 times higher risk of having abnormal emotional development than girls, but it was not statistically significant (p value 0.06 > 0.05). Children with low-educated mothers had a risk of 4.8 times (95% CI = 1.97-11.86) to have abnormal emotional development than children with high-educated mothers. Children with low-educated fathers had

a risk of 6.8 times(95% CI = 2.76-16.64) to have abnormal emotional development than children with high-educated father. Unemployed mother was a protective factor for child to have abnormal emotional development, but this was not statistically significant. Children with jobless fathers had 2.4 times (95% CI = 1.29-4.34) risk of having abnormal emotional development than children with working fathers. Children whose parents’ incomes were below the regional minimum wage had 7 times risk (95% CI = 3.26-15.14) of having abnormal emotional development than children whose parents’ incomes were above the regional minimum wage. The effect of exclusive breastfeeding to the child emotional development can be seen in Table 2.

Table 2 shows that exclusive breastfeeding had influence to the child emotional development without considering external variables. Infants who did not receive exclusive breastfeeding had 2.6 times higher risk (95% CI = 1.33-5.07) of having abnormal emotional development than infants who received exclusive breastfeeding.

The effect of exclusive breastfeeding to child emotional development by including other external factors was

**Table 1. Frequency Distribution of Subjects and Their Relation to Emotional Development of Children Aged 48-60 Months Old**

Variable	Category	Emotional Development				p Value	RR	95% CI
		Abnormal		Normal				
		n	%	n	%			
Sex	Male	21	27.5	56	72.7	0.063	1.84	1.02-3.32
	Female	15	14.9	86	85.1			
Maternal education	Low	31	31	69	69	0.001	4.84	1.97-11.86
	High	5	6.4	73	93.6			
Father’s education	Low	31	36.5	54	63.5	0.001	6.78	2.76-16.64
	High	5	5.4	88	94.6			
Maternal employment status	Unemployed	20	19.8	81	80.2	1.000	0.95	0.53-1.71
	Employed	16	20.8	61	79.2			
Father’s employment status	Unemployed	9	40.9	13	59.1	0.022	2.36	1.29-4.34
	Employed	27	17.3	129	82.7			
Parents’ income	<IDR 1,410,000	29	43.9	37	56.1	0.001	7.03	3.26-15.14
	>IDR 1,410,000	7	6.2	105	93.8			

Notes:  
RR= Risk Ratio; CI= Confident Interval

**Table 2. The Effect of Exclusive Breastfeeding to Emotional Development of Children Aged 48-60 Months**

Variable	Category	Emotional Development				p Value	RR	95% CI
		Abnormal		Normal				
		n	%	n	%			
Exclusive breastfeeding	No	26	29.2	63	70.8	0.005	2.60	1.33-5.07
	Yes	10	11.2	79	88.8			

Notes:  
RR= Risk Ratio; CI= Confidence Interval

Table 3. The Effect of Variables to Child Emotional Development

Variable	Coef	p Value	RR	95% CI
Exclusive breastfeeding	1.084	0.005	2.96	1.38-6.32
Maternal education level	1.333	0.014	3.79	1.31-11.01
Father's education level	1.091	0.03	2.98	1.11-7.98
Father's employment status	0.791	0.069	2.21	0.94-5.18
Parents' income	1.575	0.001	4.83	1.97-11.82

Notes:

RR= Risk Ratio; CI=Confidence Interval

analyzed by using cox regression. The fit model is presented in Table 3.

Table 3 shows the fit model of the effect of exclusive breastfeeding on emotional development of children by involving other factors such as parents' education level, father's employment status and parents' income. The results showed that exclusive breastfeeding had an influence to the emotional development of children. Infants who did not receive exclusive breastfeeding had 2.96 times risk (95% CI = 1.38-6.32) of suffering from abnormal emotional development than infants who received exclusive breastfeeding as controlled by variables, such as parents' education level, father's occupation and parents' income.

## Discussion

Child growth and development are strongly influenced by two major factors consisting of internal factor (genetic) and external factor (environment).<sup>13</sup> Early childhood is a "golden age period". It means that it is a golden period for all aspects of human development, which includes physical, cognitive, emotional and social development.<sup>2</sup> The development is a process of maturation of body organs including mental development/intelligence and behavior of the children.<sup>14</sup> Emotions are feelings that children physiologically and psychologically have and used to respond to any events that occur in their surrounding.<sup>15</sup> Thus, the emotional development is a process of maturation of organs including the interaction of mental development/intelligence and behavior of children that physiologically and psychologically used to respond to their surrounding environment. Emotional development problems occur due to various factors. Factors affecting the development included in this study were sex, nutrition (exclusive breastfeeding), education level of parents (mother and father), employment status of parents (mother and father) and socio-economic factor (parents' income).

Breast milk is the best food for infants. Breast milk contains complete nutrition which is good for growth and development.<sup>7</sup> Breast milk can affect intelligence and improve the bond of affection between mother and child. This bond of affection will induce a feeling of being loved

and protected, so this feeling becomes a spiritual base and establishes a good self-confidence and emotional development. Breastfeeding activity is a physical activity which improves interaction between mother and her infant. Thus, it is important for cognitive and socio-emotional development.<sup>16</sup> The results of the analysis in this study prove that exclusive breastfeeding has a great influence and significant effect on emotional development of children aged 48-60 months. This study supports study by Metwally *et al.*,<sup>7</sup> who demonstrated that exclusive breastfeeding has a positive relation to the emotional development of the children. Lind *et al.*,<sup>6</sup> also stated that children who received exclusive breastfeeding had less emotional problems than children who did not receive exclusive breastfeeding.

The study also found that the child's emotional development is also influenced by other factors, such as father's and maternal educational level, father's employment status and parents' income status. Parental education level affects the development their children.<sup>17</sup> Maternal education is often associated with the children development. Maternal education affects parenting knowledge about the fulfilment of food intake in children, the provision of stimulation and child rearing.<sup>17</sup> Children with low-educated mothers had 4.8 times higher risk of having abnormal emotional development than children with high-educated mothers. The results support study by Metwally *et al.*,<sup>7</sup> showing that low-educated mothers had a higher risk to have children suffering from emotional development disorders than the high-educated mothers. Children with low-educated fathers had 6.8 times higher risk of having abnormal emotional development than children with high-educated fathers. This fact supports finding of Ribas *et al.*,<sup>17</sup> stating that parents' high education will affect the parenting knowledge about food intake, the provision of stimulation, and child rearing.

Father's employment status mainly relates to family income which will eventually affect the family economy. This result is line with study by Lee *et al.*,<sup>18</sup> stating that employment status affects the index of childmental and emotional development. Working parents will have a good income to provide sufficient food intake and good facilities for children.<sup>7</sup>

Family economic status can be seen from family (parents) income. Poverty is associated with inadequate amount of food, bad health, bad environment, and ignorance which will hinder the children's growth and development.<sup>1</sup> The higher the income, the better the child's development because the child get adequate supply of food (nutrition).<sup>18</sup> Low income parents will have problems to provide adequate nutrition for their children, so it will affect the growth and development of the child, including her/his social and emotional develop-

ment.<sup>19</sup> Children with low-income parents were at risk 7 times higher of having abnormal emotional development than children with high-income parents. Income of families (parents) can be a risk factor which will affect the children's emotional and social health as well as their development.<sup>20</sup> This supports the finding by Metwally *et al.*,<sup>7</sup> stating that the higher family income results in better the emotional development of children. This condition is due to insufficient food intake (nutrition), providing facility to stimulate the child's development and opportunities for learning and interaction in social environment.

In multivariate analysis results, factors that had a significant relation to emotional development were the income of parents, maternal education level, father's education level, and exclusive breastfeeding. Children aged 48-60 months with low-income parents had 4.83 times risk of abnormal emotional development compared to children with high-income parents. Living in poverty is more at risk of developmental disorders because of susceptibility to infection and malnutrition, in addition to living in low financial conditions will reduce opportunities in education (learning) and social communication for children.<sup>7</sup> Parental education can increase family resources, income, also increase time allocation for the maintenance of child health, improving productivity and effectiveness of health care, and improving the reference of family life. According to Metwally *et al.*,<sup>7</sup> children with low-educated mothers tend to get insufficient food intake and less stimulation, so they will experience abnormalities of emotional development. The high parental education will affect the fulfillment of parenting knowledge about food intake, stimulation and parenting.<sup>17</sup> Good income and education of parents will affect the fulfillment of good nutrition needs also for child growth.

### Conclusion

Exclusive breastfeeding has an influence to the emotional development of 48-60 month-old children after being controlled by other factors, such as parental education level, father's employment status and parents' income. Infants who do not receive exclusive breastfeeding have 2.96 times risk of suffering from abnormal emotional development than infants who receive exclusive breastfeeding as controlled by variables such as parental education level, father's employment status and parents' income.

### Recommendation

Exclusive breastfeeding greatly influences child emotional development, so it is important for health to provide health promotion and motivation to mothers, especially pregnant women to provide exclusive breastfeeding.

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