

Relationship of Breastfeeding on Infant Development in Surakarta

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ABSTRACT

Background: Breast milk is the healthiest diet for newborns since it has the best immune system of any food, has a wealth of advantages, and contains the right combination and amount of nutrients to promote an infant's growth and development, especially between the ages of 0 and 6 months. This study aimed to determine the impact of breastfeeding on infant's development in Surakarta.

Subjects and Method: This was a retrospective cross-sectional study conducted at Community Health Centre in Surakarta, Central Java on March to August 2020. A total sample of 56 infants were selected for this study. The dependent variable was infant development. The independent variable was exclusive breastfeeding. The data collected by questionnaire. The data were analyzed by Chi-Square.

Results: Infants who are exclusive breastfeeding have a 25.50 times chance of developing better compared to infants who are not exclusive breastfeeding, and this is statistically significant (OR= 25.50; 95% CI= 1.14 to 572.30; p <0.001). Infant with exclusive breastfeeding had a better communication and social interaction at 6 months, and better cognition, communication, and social interaction at 12 months.

Conclusion: The development of infants' psychological, linguistic, fine motor, and gross motor skills can be improved by exclusive breastfeeding.

Keywords: breastfeeding, development, infants.

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BACKGROUND

Breast milk is the best and most suitable source of staple food for infants since it consists of many essential nutrients that are beneficial for boosting the baby's immunity against many ailments (Kodrat, 2010). According to Roesli, exclusive breastfeeding

is defined as breastfeeding exclusively from birth to the age of six months without the addition of other liquids like formula milk, water, honey, and others (Roesli, 2005).

According to data from the 2017 IDHS (Indonesian Demographic and Health Survey), 52% of infants under 6 months are

exclusively breastfed. Compared to IDHS statistics from 2012, this data has grown by 11%. The minimum aim of 50% set in the national development plan for the previous five years was met in 2017 by the exclusive breastfeeding rate, which was at or above that level. These findings demonstrate that as an infant gets older, the presentation of exclusive breastfeeding declines. According to data, 67% of infants under one-month-old exclusively breastfeed. This number declines to 55% for infants between two and three months old. It then drops again to 38% for infants between four and five months old. The 52% rate of exclusively nursing does not accurately reflect the percentage of infants who genuinely only receive breast milk for the first six months (Ministry of Health of the Republic of Indonesia, 2018).

Data from the Central Java Provincial Health Office in November 2017 revealed that 78.24% of infants in Surakarta, both male, and female, had breast milk (Central Java Provincial Government, 2017). This non-maximum rate of exclusive breastfeeding needs to be given extra attention since it is linked to the future availability of low-quality human resources, which will increase morbidity and death (Haryono, 2014).

Infants' growth and development progress so quickly between the ages of two and three months, so newborns need to have enough nutrients. Natural infant food, which is essential to an infant's growth and development, is mostly obtained from breast milk (Hidayat, 2015). Newborns must get Early Breastfeeding Initiation (EBI). EBI is strongly advised because it has a variety of significant advantages for infants that will promote their future growth and development (Hendarto, 2018).

Development is the process of giving the body structure and bodily functions to grow more complicated in gross motor, fine motor, speech, language, socializing, and

independence (Kusnadi, 2006). Exclusive breastfeeding is recommended for infants aged 0 to 6 months to promote better growth and development (WHO, 2011). The optimal food source for infants is breast milk, which has the right nutritional makeup and content.

The composition of breast milk is crucial for newborns to grow and develop at their best, especially between the ages of 0 and 6 months (Hosain, 2018). Breast milk feeds the brain, enabling it to stimulate itself and satisfy future demands for intelligence, skills, mental development, and social and emotional well-being. It interacts nicely with its surroundings and performs at its peak when it receives the right nutrition (Yuniarti, 2015).

Infant development can be broken down into various categories, including social-emotional, language, and gross and fine motor development where a variety of significant factors, including nutrition from breast milk, have an impact on an infant's growth and development. To enhance the infant's development, the mother's milk must always match the infant's needs in terms of both quality and quantity. Infants also require stimulation to advance their development (Febriani and Chasanah, 2017).

In the gross motor section of the ASQ (Ages and Stages Questionnaire), infants who have been breastfed exclusively for six months or longer will score higher than those who have not (Ali, 2014 in Febriana 2015).

Infants' chances of getting healthier and avoiding obesity can rise with exclusive nursing. Additionally, by the time a baby is nine months old, exclusively nursing for at least six months can help the child's gross motor skills (Belfield, 2010 in Febriana, 2015).

SUBJECTS AND METHOD

1. Study Design

This study was retrospective cross sectional.

the variable under investigation was not subjected to any interventions during research, allowing for the observational determination of the causal link between the two variables. In this study, infant development was identified through observations made over the previous six months as a retrospective approach.

2. Population and Sample

The population in this study was entire infants in the working area of Surakarta Community Health Center. The study was located throughout 7 different Regional Health Centers in Surakarta. This investigation was carried out for 6 (six) months. The sample in this study was conducted toward infants age between 6-12 months with a total of 56 infants. The data collection technique used was cluster random sampling.

3. Study Variables

The independent variable was women who breastfeed their infants between the ages of 0 and 6 months. The dependent variable was infant development

4. Operational Definition of Variables

Early initiation of breastfeeding (EIBF) is provision of mothers' breast milk to infants within the first hour of birth and ensures that the newborn receives colostrum.

Exclusive Breastfeeding was feeding infants only breast milk, be it directly from breast or expressed, except drops or syrups consisting of vitamins, mineral supplements or medicine for 0-6 months old.

Infant development was the growth of perceptual, emotional, intellectual, and behavioral capabilities and functioning during baby age measured by Denver Density Test.

5. Study Instruments

The measuring device in this study took a breastfeeding interview guide sheet, and the questions included the infant's name, birth date, length of breastfeeding, and location of the health center where the baby was regis-

tered. Measurement criteria for infant development used the DDST (Denver Development Screening test) as a reference tool. In several areas of evaluating infant development, this instrument was a widely used evaluation approach.

This test helps spot issues with infant development and can be used to reassure parents. The DDST test can also be used as a resource or instrument to identify developmental anomalies in children as early as possible. It is hoped that any anomaly or delay that may be found early enough would be addressed right away to prevent it from having a long-lasting effect. At any age or stage of the infant's growth, the mother can perform DDST autonomously.

6. Data analysis

Data analysis was performed The Chi-Square statistical test using SPSS 20.0

7. Research Ethics

Research ethical issues including informed consent, anonymity, and confidentiality, were addressed carefully during the study process. The research ethical clearance approval letter was obtained from the Research Ethics Committee, this study has obtained Ethical Clearance Number: 048/UN27.06.-6.1/KEPK/EC/2020 which states that the study was feasible and had met the study requirements.

RESULTS

The study was conducted on 56 infants aged 3 months to 12 months each at 7 different health centers in the Surakarta area. Subjects were conducted to trace the history of initiation of early breastfeeding and exclusive breastfeeding through a questionnaire given to the mother. Babies are tested for development with a denver density test according to the age of each baby

According to the study's findings, subjects had the following characteristics

based on their age, early breastfeeding initiation, and exclusive breastfeeding (Table 1). The DDST assessment results consist of personal social, language, gross motor, and fine motor (Tabel 2).

Based on Table 3 show that Infants

who are exclusive breastfeeding have a 25.50 times chance of developing better compared to infants who are not exclusive breastfeeding, and this is statistically significant (OR= 25.50; 95% CI= 1.14 to 572.30; p <0.001) (Table 3).

Table 1. Characteristics Sample

Characteristics	Category	Frequency (n)	Percentage (%)
Early Breastfeeding Initiation	Yes	40	71.43
	No	16	28.57
Exclusive Breastfeeding	Yes	51	91.07
	No	5	8.93
	0-3 Months	0	0.00
	4-6 Months (from 3 months plus 1 day)	50	89.29
Age	7-9 Months (from 3 months plus 1 day)	4	7.14
	10-12 Months (from 3 months plus 1 day)	2	3.57

Table 2. DDST assessment results

Variable	Total (n=56)	Percentage (%)
Personal social		
Normal	56	100
Suspect	0	0
Untestable	0	0
Language		
Normal	56	100
Suspect	0	0
Untestable	0	0
Gross Motor		
Normal	56	100
Suspect	0	0
Untestable	0	0
Fine Motor		
Normal	56	100
Suspect	0	0
Untestable	0	0

Table 3. Bivariate analysis of breastfeeding on infant development

Variable	Infant Development				OR	95% CI		p
	Yes		No			Lower Limit	Upper Limit	
	N	%	N	%				
Exclusive breastfeeding								
Yes	51	91	2	3.8	25.50	1.14	572.30	<0.001
No	1	1.8	1	1.8				

DISCUSSION

Bivariate analysis of the relationship between exclusive nursing and newborn development revealed a significant relationship, with a significance value of 0.004 ($p < 0.05$), between exclusive breastfeeding and infant development. The analysis's findings can thus be taken as showing that exclusively nursing can enhance a baby's growth. The percentage of moms who gave EBI (71.43%) compared to mothers who did not (28.57%) in this study determined the characteristics of subjects who were exclusively nursing.

Mothers who choose not to administer EBI due to post-SC situations in facilities where it is not standard practice to administer EBI right away after surgery. Early Breastfeeding Initiation (EBI), which involves sustaining exclusive breastfeeding until the child is six months old, is one strategy for lowering infant mortality (Mawaddah, 2018).

Mothers who breastfed their infants exclusively made up 91.07% of the study's participants, whereas 8.93% of the moms did not. This is consistent with Kurniyati's 2017 study, which found that nursing exclusively for the first six months of an infant's life had a significant impact on the child's overall development, from birth to adulthood.

Exclusive breastfeeding has a similar composition to formula milk. The mother has a crucial and fundamental role in promoting exclusive breastfeeding. The mother's state of physical and spiritual health has a significant impact on her role, and the support of her family has a positive impact on the mother's spiritual health (Metwally, 2016). The spouse can have a role in nurturing, educating, protecting, and motivating in the context of executing the exclusive breastfeeding program, which is why the role of the family is crucial in promoting exclusive breastfeeding (Kurniati, 2017).

In this study, there were no infants who were exclusively breastfed between the ages of 0 and 3 months, however between the ages of 4-6 months, 89.29% of moms supplied their breast milk exclusively, 7.14% did so fully or entirely, and just 3.57% did not.

One of the reasons mothers don't breastfeed their children is because the infant keeps crying after consuming breast milk, making the mother unsure of her ability to breastfeed her child exclusively. As a result, the mother feels the need to give formula milk in order to keep the infant calm and unagitated (Proverawati, 2009).

The findings demonstrated that all of the infants had normal psychosocial, linguistic, fine motor, and gross motor development. Riyatun found that babies who were exclusively breastfed showed fine motor development in the normal group among 23 subjects (65.7%), compared to 12 subjects (34.3%), who were included in the questionable category. This figure indicates that while the majority of subjects have fine motor development that falls within the usual group, there are still a significant number of subjects, specifically 12 subjects (34.3%), who fall under the suspicious category (Riyatun, 2017)

Children's growth and development are impacted by several intricate elements, including genetic and bio-physical-psychosocial environmental influences. Several environmental influences affect children's growth and development significantly, with one having the largest bearing on nutrition (Soetjiningsih and Ranuh, 2013). Food is the factor that has the greatest impact on children's growth and development, even though their nutritional demands are different from those of adults.

The ability of children to interact socially, eat, bathe, and dress themselves de-

pending on biological circumstances is related to social and personal development. The development of children's emotions is linked to this individual social skill. This has an impact on one's future success. The development of children's self-confidence depends on their ability to engage with others, feel protected, and feel valued. This is why social and emotional stimulation is so crucial.

EBI with neonates is one of the activities to encourage this development. When EBI happens, the mother and kid reciprocate. To give the infant a sense of security and protection, the mother will listen to the baby's cries and engage with the youngster (Soetjiningsih, 2012). The study's findings show that, with a percentage of 100%, all infant subjects who receive only breastfeeding experience normal personal and social development.

The development of fine motor skills, which include the use of small muscles and hand-eye coordination, is related to physical aptitude (Lidya, 2012). While sketching, reaching for an item, and writing take careful coordination rather than energy, this fine motor development does not (Wahyuni, 2013). According to the study's findings, 100% of the babies who were exclusively breastfed showed normal fine motor development.

Exclusive breast milk and formula milk have substantially different compositions. The baby's growth can be used to observe these variations. Babies who are exclusively breastfed, for example, can focus their eyes on a small object, whereas kids who are given formula milk have differences in fine motor abilities. When this is going on, newborns fed formula cannot (Kuchenbecker, 2015).

Language development is a sort of nonverbal communication that includes body language, intentions, facial expressions, babbling, and expressing one to six

words (Lisa, 2011). According to the study's findings, 100% of infant responders who were exclusively breastfed experienced normal language development.

The study's findings also indicated that 100% of the infant subjects who were exclusively breastfed had good or typical gross motor abilities. Babies' capacity to crawl and kick both legs when supine, lift their heads when they are on their stomachs to the right or left, and other movements are examples of gross motor skills in babies. Infants that exclusively breastfeed will have a better time coordinating their muscles and joints for movement (Yusrina, 20016).

A study by Novita et al. (2007) conducted at the Cingondewah Health Center in Bandung, babies who were exclusively breastfed had stronger cognitive ability and an average IQ of 128.3, with a range of exclusively breastfed babies IQs being higher than those who were not. Babies who are not exclusively breastfed have an average IQ of 114.4 with a range from 82 to 137.

During the "Golden Age," when child development occurs at a particularly rapid rate between the ages of 0 and 5, several things have a significant impact on children's development and growth (Ati, 2013). At the age of 2-3 months, babies who are exclusively breastfed enjoy very quick development. The infant's weight will considerably increase, and he or she will become more adept at adjusting to his environment and picking up new skills (Nirwana, 2014).

According to the study's findings, exclusive breastfeeding and improved infant development are significantly correlated. Exclusive breastfeeding and infant development in their first year after birth are statistically significant. Infant with exclusive breastfeeding had a better communication and social interaction at 6 months, and better cognition, communication, and social interaction at 12 months. Guiding the value

of exclusive breastfeeding and the proper way to breastfeed by involving the family environment is part of the duty of health professionals and cadres in supporting exclusive breastfeeding.

AUTHOR CONTRIBUTION

Ropitasari as a principal research manager that analyze quantitative and qualitative data, carry out the research, publish and submitted the article. Sri Anggarini P drafted the proposal, wrote progress and final research report and journal publication. Fresthy Astrika Yunita collect and analyze quantitative data, write progress and final research report. Anis Laela and M Nur Dewi, make research budget justification and financial reports and log-book. Hardiningsih as a research administrator, manage Issuance of Research Permit and collect research data. Cahyaning Setyo Hutomo help write log book and collect research data.

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CONFLICT OF INTEREST

There is no conflict of interest in this.

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