

Prevalence of exclusive breastfeeding in Indonesia: a qualitative and quantitative study

Elizabeth Yohmi¹, Nanis S. Marzuki¹, Eveline Nainggolan¹, I Gusti Ayu Nyoman Partiw¹,
Badriul Hegar Syarif², Hanifah Oswari²

Abstract

Background Breast milk is the best and most ideal food for babies because it contains all nutrition needed for their optimal growth and development. Babies who receive breast milk will have strong immune system, good brain development, and closer emotional bonding with their mothers. Considering the importance of breast milk, Indonesian government has been campaigning to endorse exclusive breastfeeding up to six months in the last four years. To date, there is no national data available to evaluate the exclusive breastfeeding program. Therefore, Indonesian Pediatric Society (IDAI) conducted a national survey on breastfeeding to investigate exclusive breastfeeding rate in Indonesia.

Objective To find out the prevalence of exclusive breastfeeding in Indonesia.

Methods This study included 22 provinces in Indonesia and targeted on mothers with infants aged 0-11 months. For the quantitative portion of the study we used simple random sampling design to get the prevalence from the population. For the qualitative interview data we used a stratified random sampling design to ensure that each infant age group was well represented. Survey location in each province was selected based on defining the capital city to be urban area and its sub-urban areas to be rural. This study was performed between October – November 2010.

Results We found that the prevalences of breastfeeding among baby 0-11 months was quite high which were 91%, 86%, and 72% in infants aged 0-3 months, 0-6 months, and 6-11 months, respectively. Interestingly, the prevalence of breastfeeding in urban area was higher than in rural area for infants aged 6-11 months. However, despite the high prevalence of giving breast milk, less than half of mothers gave breast milk exclusively, to babies aged 0-3 months and to those aged 0-6 months. The awareness to exclusively breastfeed was greater for urban mothers than for rural ones in those with infants aged 0-6 months. Mothers with high socioeconomic status had the highest prevalence of exclusive breastfeeding. The prevalence of breastfeeding without formula was still the highest up to 12 months but the role of giving

formula was increasing especially in rural area. The prevalence of breast milk introduced as the first milk was around 60%. Java and Sumatra had lower prevalence of breast milk introduced as the first milk compared to Kalimantan and Sulawesi. We also found that mothers started giving solid food from an early age, especially in rural areas. With increasing age, the frequency of giving breast milk declined in both urban and rural areas.

Conclusion The overall prevalence of exclusive breastfeeding up to 6 months of age in Indonesia was 49.8%. Maternal unemployment and high family socioeconomic status were associated with longer duration of breastfeeding. [Paediatr Indones. 2015;55:302-8].

Keywords: breastfeeding prevalence, Indonesian mothers, quantitative study, qualitative study

Breast milk is the first ideal and best food for baby. Breast milk contains a variety of nutrients needed for infant growth and development. Before 2001, the *World Health Organization* (WHO) recommended exclusive breastfeeding for 4-6 months. But in the same year, after conducting a systematic review of research

From the Breastfeeding Task Force¹ and Research and Human Resource Task Force² Indonesian Pediatric Society

Reprint request to: Elizabeth Yohmi, Breastfeeding Task Force Indonesian Pediatric Society, Indonesian Pediatric Society Head Office, Jl. Dempo 7 Jakarta. Email: elizabeth_yohmi@yahoo.com.

articles and consulting with experts, WHO revised the recommendation of exclusive breastfeeding from 4-6 months to 6 months (180 days), followed by 2 years of appropriate complementary foods, given in a timely, safe, and adequate manner.¹

According to *Indonesian National Household Health Survey* in 2007, the practice of giving exclusive breastfeeding in infants aged 1-3 months was 61.7%, while only 23% continued exclusive breastfeeding until 6 months of age.² This data showed that people's knowledge of the benefits of exclusive breastfeeding was low. In 2010, the *Indonesian Ministry of Health* targeted that 50% of mothers to exclusively breastfeed until their babies reached 6 months old. Considering the importance of breast milk, the Indonesian government has been continuing this campaign.

Over period of 14 years, Indonesia's infant mortality rate significantly declined from 68 out of 1,000 births in 1991 to 34 out of 1,000 births in 2005.³⁻⁴ Exclusive breastfeeding practices could reduce infant mortality by 13% and is expected to continue contributing to the *Millenium Developmental Goal* of reducing infant mortality to 23 out of 1,000 births in 2015.⁴

To date, there has been no national breastfeeding data available to evaluate the exclusive breastfeeding programs. Therefore, the Indonesian Pediatric Society/IPS (*Ikatan Dokter Anak Indonesia/IDAI*) conducted a national survey on breast milk/breastfeeding practice to measure exclusive breastfeeding rate in Indonesia. The survey was conducted in 2010-2011. The aim of this report was to present the prevalence of exclusive breastfeeding and to understand factors associated with exclusive breastfeeding practice.

Methods

This study was a nationwide survey that included both qualitative and quantitative studies. The quantitative study included mothers who had infants aged 0-11 months. This study was conducted from October to November 2010 in both rural and urban areas of 20 provinces in Indonesia (Nanggroe Aceh Darussalam, North Sumatera, Riau, West Sumatera, South Sumatera, Lampung, Jambi, Batam, DKI Jakarta, Banten, West Java, Cenral Java, DIY Yogyakarta, East Java, Bali, South Sulawesi, North Sulawesi,

South Kalimantan, East Kalimantan, and West Kalimantan).

In the quantitative portion of the study, we employed a simple random sampling design to assess the prevalence of breastfeeding. The study included 3,117 urban mothers and 2,074 rural mothers. For detailed interview in urban area we imposed a quota on those who delivered in public or private hospital (50:50) and we used a stratified random sampling design to ensure that each infants age group was well represented. Detailed interviews were performed according to the survey location in each province, which was selected based on the capital city defined to be urban and its sub-urban area defined to be rural. Due to the limited sample size for both the qualitative and quantitative portions of the study, we were only able to analyze at national level, not area levels.

Based on their socioeconomic status, mothers were also divided into 4 levels as follows: level A (with household expenditures of IDR 2,500,000 to 5,000,000 per month), level B (IDR 1,750,000 -2,500,000 per month), level C (IDR 900,000-1,750,000 per month), and level D (IDR 600,000-900,000 per month (at the time of the study, the USD 1 is approximately IDR 9,700)). This study was approved by the University of Indonesia Research Ethics Committee.

Results

During the study period, total of 5,191 mothers with babies 0-11 months were asked if they breastfed their babies. The distribution of participants is shown in **Table 1**.

Figure 1 shows that breastfeeding prevalence was quite high, especially in the first three months of life. The prevalence of giving breast milk was slightly higher in rural than in urban area for infants aged 0-3 months (93% vs. 90%, respectively). However, for infants aged 6-11 months, the urban area incidence was slightly higher than in rural areas (75% vs. 69%, respectively). In the first 6 months of life, Java and Sumatera had higher incidences of breastfeeding compared to those of Sulawesi and Kalimantan. Kalimantan was an area of concern for infants aged 6-11 months, as the decrease was dramatic. There was no significant difference in the incidence of breastfeeding among social economic status (SES)

Table 1. Distribution of participants in urban and rural areas

Areas/provinces	Total quantitative portion		Qualitative interview data															
			0 month		1 month		2 month		3 month		4 month		5 month		8 month		11 month	
	U	R	U	R	U	R	U	R	U	R	U	R	U	R	U	R	U	R
Sumatra																		
Nanggroe Aceh Darussalam	155	103	5	3	5	3	5	3	5	3	5	3	5	3	5	3	5	3
Sumatra Utara	155	102	5	3	5	3	5	3	5	3	5	3	5	3	5	3	5	3
Riau	155	103	5	3	5	3	5	3	5	3	5	3	5	3	5	3	5	3
Sumatra Barat	155	102	5	3	5	3	5	3	5	3	5	3	5	3	5	3	5	3
Sumatra Selatan	156	106	5	3	5	3	5	3	5	3	5	3	5	3	5	3	5	3
Lampung	131	81	5	3	5	3	5	3	5	3	5	3	5	3	5	3	5	3
Jambi	153	102	5	3	5	3	5	3	5	3	5	3	5	3	5	3	5	3
Batam	130	77	5	3	5	3	5	3	5	3	5	3	5	3	5	3	5	3
Jawa & Bali																		
DKI Jakarta	210	159	6	4	6	4	6	4	6	4	6	4	6	4	5	3	5	3
Banten	154	103	6	4	6	4	6	4	6	4	6	4	6	4	5	3	5	3
Jawa Barat	155	103	6	4	6	4	6	4	6	4	6	4	6	4	5	3	5	3
Jawa Tengah	155	101	6	4	6	4	6	4	6	4	6	4	6	4	5	3	5	3
DIY Yogyakarta	155	102	6	4	6	4	6	4	6	4	6	4	6	4	5	3	5	3
Jawa Timur	155	102	6	4	6	4	6	4	6	4	6	4	6	4	5	3	5	3
Bali	155	103	6	4	6	4	6	4	6	4	6	4	6	4	5	3	5	3
Sulawesi																		
Sulawesi Selatan	159	110	5	3	5	3	5	3	5	3	5	3	5	3	5	3	5	3
Sulawesi Utara	159	105	5	3	5	3	5	3	5	3	5	3	5	3	5	3	5	3
Kalimantan																		
Kalimantan Selatan	157	104	5	3	5	3	5	3	5	3	5	3	5	3	5	3	5	3
Kalimantan Timur	157	103	5	3	5	3	5	3	5	3	5	3	5	3	5	3	5	3
Kalimantan Barat	156	103	5	3	5	3	5	3	5	3	5	3	5	3	5	3	5	3
TOTAL	3,117	2,074	107	67	107	67	107	67	107	67	107	67	107	67	100	60	100	60

U:urban; R:rural

levels for babies aged 0-6 months, but the prevalence of breastfeeding significantly decreased in the level A and B groups after infants reached 6 months of age.

Despite the high prevalence of breastfeeding, only less than half of mothers with infants aged 0-3 months practiced proper exclusive breastfeeding and it was even lower in mothers with infants aged 0-6 months (43 % and 27%, respectively). The urban prevalence of exclusive breastfeeding for 0-6 month-olds was slightly higher than rural (30% to 25%) as shown in **Figure 2** and **Figure 3**. Sumatra and Sulawesi

had the lowest prevalence for exclusive breastfeeding (0-3 months: 38% and 0-6 months: 21%). For 0-3 months, SES level A and B groups definitely has the lowest prevalence of exclusive breastfeeding (34%). Among 0-6 month olds, there was significant drop in the SES level C group (from 43% to 26%).

We also examined the pattern of breastfeeding and formula feeding. The prevalence of breast milk without formula milk was still the highest up to 12 months of age. Over time, however, role of formula was increasing and breast milk without formula was declining. Breast milk without formula was still the

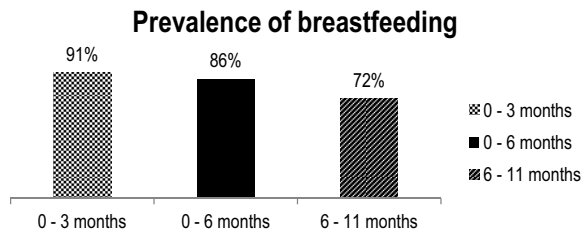


Figure 1. Prevalence of breastfeeding among mothers with infants aged 0-11 months, by age group

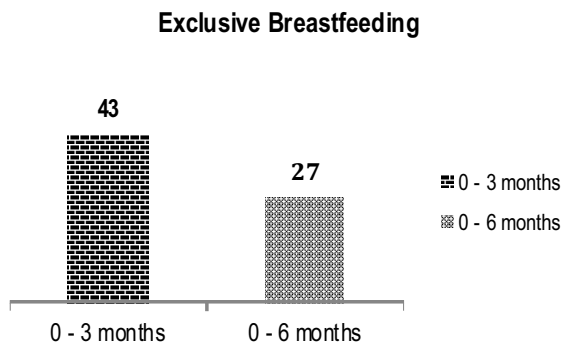


Figure 2. Prevalence of exclusive breastfeeding

highest among infants 0-3 months and more so for rural areas. Entering 6 months, share of formula without breast milk was significant increased, especially in rural area. For babies aged 6-11 months,

the usage of formula was higher among SES level A, B, and C groups, and formula only was the highest among SES level A and B.

The prevalence of breast milk given as the first milk was around 60%. Jawa and Sumatra had lower prevalence of breast milk introduced as the first milk compared to Kalimantan and Sulawesi (55%, 68%, 82%, and 87%, respectively). Rural Jawa had highest prevalence of formula milk as the first milk (51%). Breast milk as the first milk prevalence was clearly the lowest among SES level A and B groups (54%).

We also evaluated the timing of solid food introduction, in light of the WHO recommendation. We found that mothers started giving solid food from

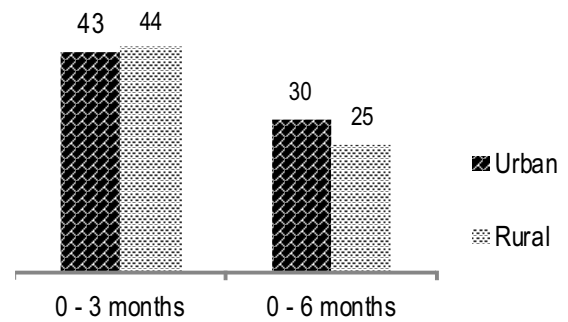


Figure 3. Prevalence of exclusive breastfeeding based on geographic area

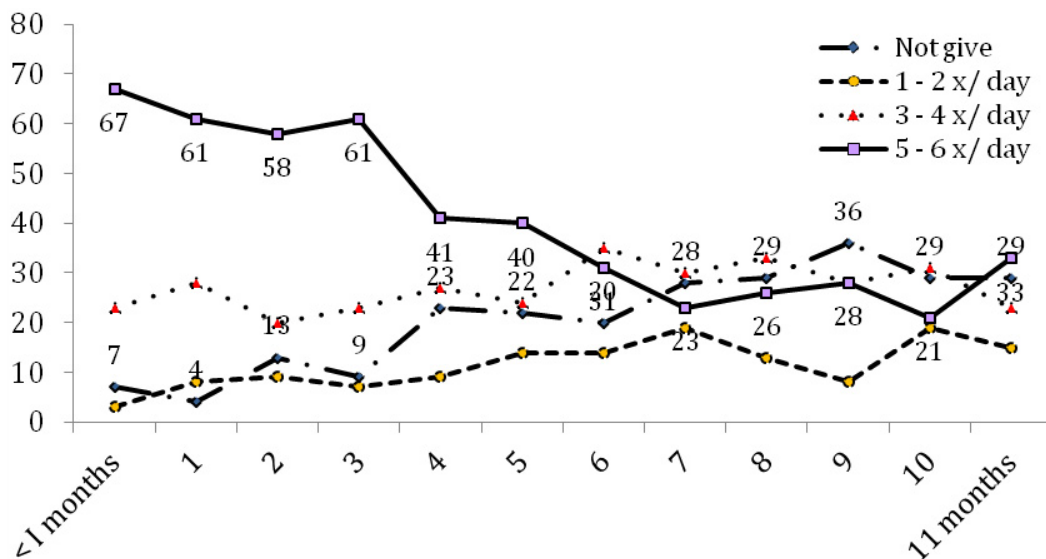


Figure 4. Frequency of breastfeeding according to age groups

an early age, especially in rural areas, with 64% of rural mothers giving solid food when the baby turned 4 months of age. Mothers in Sumatra gave solid food a bit sooner than mothers in other islands, with 70% of babies were given solid food at 4 months of age. Up to 6 months of age, Sulawesi mothers were the slowest in giving solid food. The number of mothers who introduced solid food at an early age was slightly higher in the SES level C, D, and E groups than in the level A and B groups.

We also surveyed mothers on the frequency of giving breast milk. As infants aged, breast milk frequency was declining as shown in **Figure 4**.

Urban and rural areas had similar pattern in breastfeeding frequency, except for babies aged 7 to 9 months. When babies reached 6 months of age, many mothers maintained the night and early morning breastfeeding, and dropped the daytime feedings, as babies were introduced to solid food. Urban and rural areas had similar pattern up to baby 6 months of age. After 6 months, early morning till lunch time breastfeeding decreased much more in rural area. In SES level A and B, mothers who nursed in the morning and day time were slightly lower than other SES level groups.

Discussion

The WHO recommends that mothers exclusively breastfeed until their infants are six month old. Breast milk is the best food for optimal growth and development of an infant.⁵⁻⁶ Although the benefits of breastfeeding are numerous, the rate of mothers who exclusively breastfed for 6 months was reported to be unsatisfactory. In developed countries, the rate of six-month exclusive breastfeeding was low. In the United States, it was only 11.3%,⁷ while it was 10.1% in Sweden,⁸ 7% in Norway,⁹ 13.8% in Canada,¹⁰ and 13.4% in Hong Kong.¹¹ In developing countries, this rate was more favorable. As many as 49% of mothers exclusively breastfed in Ethiopia,¹² 48% in India,¹³ and 20% in Namibia.¹⁴ A study conducted in peninsular Malaysia showed a rate of 14.5%.¹⁵ In Australia, with >80% of women leaving the hospital breastfeeding, fewer than half of infants received any breast milk at 6 months.¹⁶

Successful breastfeeding depends on factors related to the mother, infant, and a supportive envi-

ronment. Breastfeeding duration has been positively associated with maternal age, level of maternal education, and a variety of hospital practices, such as 24-hour rooming-in and early infant-to-breast contact. The introduction of pacifiers, maternal smoking, maternal obesity, and an early return to work, all have been shown to be negatively associated with breastfeeding duration. Maternal age and level of maternal education have been shown repeatedly to be positively associated with both breastfeeding initiation and duration. Prolactal feeding and the early supplementation of breastfeeding with infant formula have been associated with shorter duration of breastfeeding.¹⁶⁻¹⁷ In Teheran, Marandi et al. found that the use of supplementary formula, estrogen-containing oral contraceptives, fathers with high incomes, and mothers with a high education level negatively influenced the duration of breastfeeding.¹⁸

Around 60% of mothers gave breast milk as the first feeding. The Baby-Friendly Hospital Initiative (BFHI) was launched by WHO and UNICEF in 1991, following the Innocenti Declaration of 1990. The initiative is a global effort to implement practices that protect, promote and support breastfeeding. Ten steps to successful breastfeeding have been accepted as the minimum global criteria for designating a hospital as baby-friendly. WHO also recommends that mothers initiate breastfeeding within one hour of birth. Babies should be placed in skin-to-skin contact with their mothers immediately following birth for at least an hour, and mothers should be encouraged to recognize when their babies are ready to breastfeed, offering help if needed.¹⁹ If this program were to be implemented in all health care facilities, there would be higher rates of breast milk as the first feeding.

We found that mothers started giving solid food from an early age, especially in rural areas. In rural regions, 64% of mothers gave solid food when their babies turned 4 months of age. Mothers in Sumatra gave solid food sooner than mothers on other islands, as 70% of those who turned 4 months had already been given solid food. In Norway and the USA, only 21% percent of infants were introduced to solid foods before the age of 4 months.^{20,21} WHO and UNICEF already recommend the introduction of nutritionally-adequate and safe, complementary (solid) foods at 6 months of age, together with continued breastfeeding for up to two years of age or beyond.¹

A Netherland study found that maternal high education level was related to a high percentage of starting breastfeeding and duration of breastfeeding.²² We found that mothers who lived in rural areas started giving solid food earlier, and the duration for giving breast milk until 11 months was higher in urban areas.

In conclusion, exclusive breastfeeding should be given until the baby is 6 month-old, because the nutritional needs of infants can be fulfilled by breast milk alone, as recommended by the WHO. The prevalence of exclusive breastfeeding in Indonesia is low, at 49.8%. Maternal unemployment and high family socioeconomic status were associated with longer durations of breastfeeding.

Conflict of interest

None declared.

References

1. World Health Organization. Global Strategy for infant and young child feeding. Geneva: WHO; 2003 [cited 2014 June 20]. Available from: <http://whhqlibdoc.who.int/publication/2003/9241566218.pdf>.
2. Badan Penelitian dan Pengembangan Kesehatan, Kementerian Kesehatan Republik Indonesia. Survey kesehatan rumah tangga. Jakarta: Kemenkes RI; 2007. p.172-3.
3. Pusat Data dan Informasi, Kementerian Kesehatan Republik Indonesia. Peta kesehatan Indonesia 2007. Jakarta: Kementerian Kesehatan RI; 2008. [cited 2014 June 20]. Available from: <http://www.depkes.go.id/downloads/publikasi/Peta%20Kesehatan%202007.pdf>.
4. United Nations, Minister of the National Development Planning Head of the National Development Planning. Report on the achievement of millennium development goals Indonesia 2007. Jakarta: Kementerian Negara Perencanaan Pembangunan Nasional/Badan Perencanaan Pembangunan Nasional; 2007. [cited 2014 June 20]. Available from: <http://www.id.undp.org/content/dam/indonesia/docs/MDG/MDG%20Report%202007.pdf>.
5. Kramer M, Kakuma R. The optimal duration of exclusive breastfeeding: a systematic review. *Adv Exp Med Biol.* 2004;554:63-77.
6. World Health Organization. Up to what age can a baby stay well nourished by just being breastfed? [cited January 25, 2012]; Available from: <http://www.who.int/features/qa/21/en/index.html>.
7. Center for Disease Control and Prevention. Breastfeeding trends and updated national health objectives for exclusive breastfeeding-United States, birth years 2000-2004. *MMWR Morb Mortal Wkly Rep.* 2007;56:760-3.
8. Brekke H, Ludvigsson J, Odijk Jv, Ludvigsson J. Breastfeeding and introduction of solid foods in Swedish infants: the all babies in southeast Sweden study. *Br J Nutr* 2005;94:377-82.
9. Lande B, Andersen L, Baerug A, Trygg K, Lund-Larsen K, Veierod M, et al. Infant feeding practices and associated factors in the first six months of life: the Norwegian infant nutrition survey. *Acta Paediatr.* 2003;92:152-61.
10. Al-Sahab B, Lanes A, Feldman M, Tamim H. Prevalence and predictors of 6-month exclusive breastfeeding among Canadian women: a national survey. *BMC Pediatrics.* 2010;10:20.
11. Leung EY, Au K, Cheng SS, Kok SY, Lui HK, Wong WC. Practice of breastfeeding and factors that affect breastfeeding in Hong Kong. *Hong Kong Med J.* 2006;12:432-6.
12. Alemayehu T, Haidar J, Habte D. Determinants of exclusive breastfeeding practices in Ethiopia. *Ethiop J Health Dev.* 2009;23:12-8.
13. Ministry of Health and Family Welfare. National family health survey 3, India. 2007 [January 25, 2012]; Available from: <http://mohfw.nic.in/nfhs3/CD.htm>.
14. Salami L. Factors influencing breastfeeding practices in Edo State, Nigeria. *AJFAND.* 2006;6:1-12.
15. Tan K. Factors associated with exclusive breastfeeding among infants under six months of age in peninsular Malaysia. *Int Breastfeed J.* 2011;6:2.
16. Scott JA, Binns CW, Oddy WH, Graham KI. Predictors of breastfeeding duration: evidence from a cohort study. *Pediatrics.* 2006;117:e646.
17. Vogel A, Hutchison B, Mitchell E. Factors associated with the duration of breastfeeding. *Acta Paediatr.* 1999;88:1320-6.
18. Marandi A, Afzali HM, Hossaini AF. The reasons for early weaning among mothers in Teheran. *Bull World Health Organ.* 1993; 71: 561-9.
19. World Health Organization. The baby-friendly hospital initiative: revised, updated, and expanded for integrated care. Geneva: World Health Organization: 2009. p.23-4.
20. Lande B, Andersen L, Bæug A, Trygg KU, Lund-Larsen K, Veierod MB, et al. Infant feeding practices and associated factors in the first six months of life: The Norwegian Infant Feeding Survey. *Acta Paediatr.* 2003;92:152-61.

21. Fein SB, Labiner-Wolfe J, Scanlon KS, Grummer-Strawn LM. Selected complementary feeding practices and their association with maternal education *pediatrics* 2008;122;S91-7.
22. van Rossem L, Oenema A, Steegers EAP, Moll HA, Jaddoe VWV, Hofman A, *et al.* Are starting and continuing breastfeeding related to educational background? The generation R study. *Pediatrics* 2009;123;e1017-27.