

# Prevalence of Exclusive Breastfeeding at 3, 4 and 6 Months in Bangkok Metropolitan Administration Medical College and Vajira Hospital

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**Objective:** To determine the prevalence of exclusive breastfeeding at 3, 4, and 6 months postpartum in women who delivered at Bangkok Metropolitan Administration Medical College and Vajira Hospital, and to evaluate the potential factors for continuation of exclusive breastfeeding.

**Material and Method:** A prospective descriptive study was performed in 210 mothers who delivered in the authors' institution between December 1, 2006 and February 28, 2007. All eligible subjects were interviewed before discharge from the hospital. The successive postpartum interviews were then conducted via telephone at 3, 4, and 6 months after delivery.

**Results:** Average maternal age was 27 years and over half (54.3%) were primipara. Rates of exclusive breastfeeding at 3, 4, and 6 months were 48%, 26%, and 11% respectively. Significant factors for exclusive breastfeeding were duration allowed for work absence and intended time to breastfeed.

**Conclusion:** Approximately half of the mothers in the present study provided exclusive breastfeeding to their babies in the first 3-month postpartum. The prevalence of exclusive breastfeeding at 6 months was lower than the 30% goal of the 9<sup>th</sup> National Economic and Social Development Plan. The need to return to work and intended time to breastfeed were the significant factors affecting duration of exclusive breastfeeding.

**Keywords:** Exclusive breast feeding

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It is widely accepted that human breast milk is the best form of nutrition for neonates and infants<sup>(1)</sup>. Expert panels including the World Health Organization<sup>(2)</sup>, the American Academy of Pediatrics<sup>(1)</sup>, and the American Dietetic Association<sup>(3)</sup> recommend that babies should be breastfed exclusively for the first six months. Thereafter, breastfeeding should be maintained with complementary foods for at least 12 months<sup>(1,2)</sup>. However, in a viewpoint of maternal competency, the continuing breastfeeding may lie on many potential factors such as maternal attitude, socioeconomic aspect, breast and nipple conditions, and infant

status<sup>(4-8)</sup>. In a Western country; for example, the United States, data from the national survey in 2004 demonstrated that there were only 30.5% and 11.3% of mothers who exclusively breastfed their babies at three- and six months respectively<sup>(9)</sup>.

In Thailand, the Ministry of Public Health launched the Ten Steps to successful breastfeeding practice and the Baby-friendly Hospital Initiative program in 1991 to promote exclusive breastfeeding strategy<sup>(10)</sup>. Ten years later, this policy was emphasized in the 9<sup>th</sup> National Economic and Social Development Plan<sup>(11)</sup> that the overall 6-month exclusive breastfeeding rate in the country should be at least 30%. Despite this intensive movement, a report from the national survey in 2005 revealed only 14.5% of exclusive breastfeeding rate at 6-month postpartum<sup>(12)</sup>.

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The Bangkok Metropolitan Administration (BMA) Medical College and Vajira Hospital is a tertiary referral center located in the Northwestern region of the capital that serves mostly low-income and middle-class population from the inner city, peripheral districts, and nearby provinces. The institution has also participated in the Ten Steps to successful breastfeeding practice and the Baby-friendly Hospital Initiative program. Nevertheless, in an urban community, a number of mothers need to return to work at three months after delivery, and some at a much earlier period. Thus, to evaluate if our hospital's breastfeeding project could reach the national target, the purpose of the present study was to explore the 3-, 4-, and 6-month exclusive breastfeeding rates in women who had attended the antenatal clinic and delivered in the authors' institution. Further aim was to determine the potential factors associated with the duration of exclusive breastfeeding.

### Material and Method

This prospective questionnaire-based study was conducted after approval from the BMA Ethics Committee for researches involving human subjects. Mothers who delivered at BMA Medical College and Vajira Hospital between 1 December 2006 and 28 February 2007 were recruited. Eligibility criteria were women who: 1) had attended the antenatal clinic at the authors' institution; 2) delivered a singleton, term baby in our institution; 3) initiated breastfeeding within 48 hours after delivery; and 4) volunteered to answer questions via telephone at 3-, 4-, and 6-month postpartum. Individuals who were out of contact before 6-months were excluded from the present study.

At the postpartum ward, each of the eligible subjects was informed about the present study and signed a consent form. The first interview was carried out on the second day post delivery. A questionnaire included maternal socio-demographic features, knowledge and attitude about breastfeeding, intended time to breastfeed, duration allowed for work absence, milk quantity, and breast problems. Subsequently, a schedule of successive telephone interviews was set at 3-, 4-, and 6-months postpartum. The follow-up interview consisted of the duration of exclusive breastfeeding, time at which infant formula or other kinds of liquid and food were added, and main reason for cessation of breastfeeding.

Additional demographic and clinical data of the enrolled subjects were collected from the obstetric charts. Exclusive breastfeeding was defined when the mother provided only breast milk to the baby. When

liquids such as water, or juice were given in conjunction with breast milk, this referred to predominant breastfeeding. The term of partial breastfeeding means giving other kind of milk to the baby along with breast milk, regardless of liquids or solids provided. Bottled feeding was defined when the mother provided other kinds of milk without breast milk.

Statistical analysis was performed with the Stata 7.0 (Stata Corp., College station, TX, USA). All variables were presented as number with percentage. Associations between factors were analyzed by Chi-square test for univariate analysis, and by multiple logistic regression for multivariate analysis. Results were presented as adjusted odds ratio (OR) with 95% confidence interval (CI). P-value < 0.05 was considered statistically significant.

### Results

Two hundred ten mothers were included. Their mean age was 27 years; over half (54.3%) were primipara. Seventy-six percent had vaginal delivery while the rest underwent cesarean section. Mean birthweight was 3,079 grams (range 2,300-4,100 grams). Regarding their occupations, 35.2% were housewives, 30% were employees, and the remainder were business owners, officers, or had other occupations. Most of them had secondary school education (41%), and had a monthly income of 10,000-20,000 baht (40%). Although intended time to breastfeed of the majority of the mothers (63.5%) was 3-6-months or longer, most of them (51.9%) needed to return to work within 6-months after delivery. Details of the population characteristics are shown in Table 1. Rates of exclusive, predominant, partial breastfeeding and bottle-feeding of the study population at 3-, 4-, and 6-month postpartum are presented in Table 2. At 3-months after delivery, almost half (47.6%) had exclusive breastfeeding while 28.6% had bottle-feeding. Rate of exclusive breastfeeding remained only 11% at 6-months postpartum.

The authors sought to determine factors that might be associated with 3-months exclusive breastfeeding. From univariate analysis (Table 3), duration allowed for work absence ( $p = 0.01$ ), intended time to breastfeed ( $p = 0.01$ ), and breastfeeding problems ( $p = 0.02$ ) were the three significant potential factors affecting exclusive breastfeeding while age, occupation, education, and income were not. However, from multivariate analysis (Table 4), only duration allowed for work absence (adjusted OR = 2.3; 95% CI = 1.16-4.54) and intended time to breastfeed (adjusted OR = 4.54; 95% CI = 1.19-17.34) were the independent factors

**Table 1.** Characteristics of mothers (n = 210)

Characteristic	n	Percent
Age group		
< 20 years	33	15.7
20-34 years	143	68.1
≥ 35 years	34	16.2
Occupation		
Housewife	74	35.2
Employee	63	30.0
Business owner	28	13.4
Public officer	12	5.7
Other (unemployed, students)	33	15.7
Education		
No education	3	1.4
Elementary education	47	22.4
Secondary education	86	40.9
Diploma	9	4.3
Bachelor	37	17.6
Master's degree	2	1.0
Others(vocational certificate)	26	12.4
Duration allowed for work absence		
No	25	11.9
< 3 months	32	15.2
3-6 months	77	36.7
> 6 months	76	36.2
Income		
No	2	1.0
< 5,000 baht/month	10	4.8
5,000-10,000 baht/month	50	23.8
10,000-20,000 baht/month	84	40.0
> 20,000 baht/month	64	30.4
Parity		
Primipara	114	54.3
Multipara	96	45.7
Intended time to breastfeed		
< 3 months	19	9.0
3-6 months	185	88.1
> 6 months	6	2.9
Route of delivery		
Vaginal delivery	159	75.7
Caesarean section	51	24.3

associated with 3-months exclusive breastfeeding. At 3 months postpartum, the authors found that a need to return to work was the leading cause of discontinuation of breastfeeding (37.4%). Insufficient milk (26.3%) and infant refusal (13.1%) were the second and third reasons respectively (no data presented).

### Discussion

The American Academy of Pediatrics and other organizations endorsed breastfeeding as the preferred source of nutrition for infants younger than 6-months because of its proven benefits to the infants and mothers<sup>(1)</sup>. In Thailand, exclusive breastfeeding policy has been promoted continuously for over a decade but its national 6-month rate was still disappointing (only 14.5%). In the present study, the authors found that exclusive breastfeeding at 3 months (47.6%), was higher than that of Paiprasert's study in Nakhonsawan province (30.4%)<sup>(13)</sup> and Ratanachu-ek's study in Yala province (26.8%)<sup>(14)</sup>. But the authors' 6-month exclusive breastfeeding rate (11.0%) was lower than that in Nakhonsawan (25%). In the United States, the 2001 National Immunization Survey revealed that prevalence of exclusive breastfeeding at 6-months was only 7.9%<sup>(15)</sup>. From the National Breastfeeding Survey 2001 of Singapore, only 7% of the mothers breastfed exclusively at 4 months, and this rate fell to near zero at 6-months<sup>(16)</sup>. The difference of population studied, sample sizes, geographic locations, as well as the year of survey might be the possible explanation for the difference of exclusive breastfeeding rates among these studies.

In the present study, factors associated with 6-month exclusive breastfeeding could not be clarified exactly due to the limited number of mothers who exclusively 6-month breastfed.

Thus, the authors focused on the factors associated with exclusive breastfeeding at 3 months instead because a number of women who worked such

**Table 2.** Rate of exclusive, predominant, partial breastfeeding, and bottled feeding of the study population at 3-, 4-, and 6-month postpartum (n = 210)

Duration after delivery	Exclusive breastfeeding n (%)	Predominant breastfeeding n (%)	Partial breastfeeding n (%)	Bottled feeding n (%)
At 3 months	100 (47.6)	31 (11.8)	19 (9.0)	60 (28.6)
At 4 months	55 (26.2)	22 (10.5)	37 (17.6)	96 (45.7)
At 6 months	23 (11.0)	7 (3.3)	59 (28.1)	121 (57.6)

**Table 3.** Univariable analysis of factors that might be associated with 3-month exclusive breastfeeding

Factors	Exclusive breastfeeding < 3 months (n = 107) n (%)	Exclusive breastfeeding ≥ 3 months (n = 103) n (%)	p-value
Age			
< 20 years	17 (51.5)	16 (48.5)	0.20
20-34 years	8 (47.6)	75 (52.4)	
≥ 35 years	22 (64.7)	12 (35.3)	
Parity			
Primipara	60 (52.6)	54 (47.4)	0.60
Multipara	47 (49.0)	49 (51.0)	
Income (baht/month)			
< 10,000	27 (43.5)	35 (56.5)	0.12
10,000-20,000	50 (59.5)	34 (40.5)	
≥ 20,000	30 (46.9)	34 (53.1)	
Occupation			
Officer/employee	55 (53.4)	48 (46.6)	0.50
Housewife/unemployee	52 (48.6)	55 (51.4)	
Education			
Lower than Bachelor	88 (51.5)	83 (48.5)	0.86
Bachelor and higher	19 (48.7)	20 (51.3)	
Knowledge of breastfeed			
Yes	102 (49.8)	103 (50.2)	0.53
No	5 (100.0)	0 (0.0)	
Route of delivery			
Vaginal delivery	75 (47.2)	84 (52.8)	0.06
Caesarean section	32 (62.7)	19 (37.3)	
Breastfeeding problem			
Yes	21 (70.0)	9 (30.0)	0.02
No	86 (47.8)	94 (52.2)	
Duration of work absence			
< 3 months	39 (68.4)	18 (31.6)	0.01
≥ 3 months	68 (44.4)	85 (55.6)	
Intended to breastfeed			
< 3 months	16 (84.2)	3 (15.8)	0.01
≥ 3 months	91 (47.6)	100 (52.4)	

**Table 4.** Multivariate analysis of factors that might be associated with 3-month exclusive breastfeeding

Factors	Adjusted odds ratio	95% CI	p-value
Maternal age			
(< 20 years* / 20-34 years)	0.85	0.35-2.09	0.73
(< 20 years* / ≥ 35 years)	0.36	0.10-1.25	0.11
Parity			
(primipara* / multipara)	1.20	0.60-2.24	0.65
Duration allowed for work absence			
(< 3 months* / ≥ 3 months)	2.30	1.16-4.54	0.017
Income			
(<20,000* / ≥ 20,000 baht/month)	1.58	0.73-3.41	0.25
Education			
(No* / Primary, Seconadary, other)	0.63	0.24-16.98	0.79
(No* / Bacheloer, Master)	0.80	0.26-24.59	0.90
Intended time to breastfeed			
(< 3months* / ≥ 3months)	4.54	1.19-17.34	0.027
Breastfeeding problems			
(Yes* / No)	2.06	0.82-5.17	0.13

\* Reference value

as the officers were allowed to leave from work for 3-months. From the present results, maternal age was not a significant factor, which was the same as the studies of Ratanachu-ek<sup>(14)</sup> and Temchareon<sup>(17)</sup>. Maternal occupation was not associated with exclusive breastfeeding in the present study, which was in accordance with the result of Ratanachu-ek<sup>(14)</sup>, but different from the studies of Paiprasert<sup>(13)</sup> and Foo<sup>(24)</sup>. From Paiprasert's<sup>(20)</sup> and Foo's<sup>(24)</sup> studies, non-working mothers were more likely to breastfeed their babies for a longer duration. Maternal education was also not associated with rate of exclusive breastfeeding as Ratanachu-ek's study<sup>(21)</sup> but different from the studies of Foo<sup>(16)</sup> and Heck<sup>(18)</sup>. According to the studies of Foo<sup>(16)</sup> and Heck<sup>(18)</sup>, the mothers who had a higher level of education breastfed much longer. From multivariate analysis, the authors found that duration allowed for work absence and intended time to breastfeed were significant associated with rate of 3-months exclusive breastfeeding. The mothers who had the duration allowed for work absence more than 3 months had significantly increased rate of exclusive breastfeeding, which was in accordance with the results of Foo<sup>(16)</sup> and Fein<sup>(19)</sup>. Likewise, the mothers who intended to breastfeed for 3 months or longer had a significantly increased rate of exclusive breastfeeding, which was the same as the result of Paiprasert<sup>(13)</sup>. From the analysis, the authors found that the significant reason for cessation of exclusive breastfeeding was a need to return to work, since 64.8% worked outside. This factor was also found in the study from Nakhonsawan province<sup>(13)</sup>. To improve the rate of exclusive breastfeeding in urban areas where mothers need to work outside, the authors proposed that the obstetricians should encourage and pay more attention to instruct the mothers how to pump and to keep their milk for the babies when they return to work. Moreover, if there is a government policy allowing mothers to leave from work for at least 6-months after delivery, the authors believe that the rate of 6-month exclusive breastfeeding might increase.

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### ความชุกของการเลี้ยงลูกด้วยนมแม่อย่างเดียวยุติเวลา 3, 4 และ 6 เดือนหลังคลอดบุตร ในวิทยาลัยแพทยศาสตร์กรุงเทพมหานครและวชิรพยาบาล

ปรกรณ์ หลายศิริเรืองไร, บุษบา วิริยะศิริเวช, ชาดากานต์ ฝโลประการ, สุนนมาลย์ มนัสศิริวิทยา

**วัตถุประสงค์:** เพื่อศึกษาความชุกของการเลี้ยงลูกด้วยนมแม่อย่างเดียวยุติเวลา 3, 4 และ 6 เดือนหลังคลอดบุตร ในวิทยาลัยแพทยศาสตร์กรุงเทพมหานครและวชิรพยาบาล และเพื่อศึกษาปัจจัยที่มีผลต่อระยะเวลาการเลี้ยงลูกด้วยนมแม่อย่างเดียว

**วัสดุและวิธีการ:** ศึกษาเชิงพรรณนาไปข้างหน้าในแม่ 210 คนที่คลอดบุตรที่วิทยาลัยแพทยศาสตร์กรุงเทพมหานครและวชิรพยาบาล ระหว่างวันที่ 1 ธันวาคม พ.ศ. 2549 ถึง 28 กุมภาพันธ์ พ.ศ. 2550 ติดตามการเลี้ยงลูกด้วยนมแม่โดยการสัมภาษณ์โดยตรงก่อนออกจากโรงพยาบาล และสัมภาษณ์ทางโทรศัพท์ เมื่อ 3, 4 และ 6 เดือนหลังคลอดบุตร

**ผลการศึกษา:** อายุเฉลี่ยของแม่คือ 27 ปี ร้อยละ 54.3 เป็นการตั้งครรภ์แรก อัตราการเลี้ยงลูกด้วยนมแม่อย่างเดียวยุติ 3, 4 และ 6 เดือนคือ ร้อยละ 48, ร้อยละ 26, และร้อยละ 11 ตามลำดับ ปัจจัยสำคัญที่มีผลต่ออัตราการเลี้ยงลูกด้วยนมแม่อย่างเดียว คือ ระยะเวลาหยุดงานหลังคลอดและระยะเวลาที่ตั้งใจจะให้นมแม่

**สรุป:** ประมาณครึ่งหนึ่งของแม่ในการศึกษานี้เลี้ยงลูกด้วยนมแม่อย่างเดียวยุติใน ระยะ 3 เดือนแรกหลังคลอด ความชุกของการเลี้ยงลูกด้วยนมแม่อย่างเดียวยุติ 6 เดือนหลังคลอดยังคงต่ำกว่าเป้าหมายตามแผนพัฒนาเศรษฐกิจ และสังคมแห่งชาติฉบับที่ 9 ซึ่งกำหนดไว้ที่ร้อยละ 30 ปัจจัยสำคัญที่มีผลต่อระยะเวลาของการเลี้ยงลูกด้วยนมแม่อย่างเดียวยุติคือความจำเป็นที่ต้องกลับไปทำงานและระยะเวลาที่ตั้งใจให้นมแม่

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