Thai Journal of Obstetrics and Gynaecology
April 2019, Vol. 27, No. 2, pp. 79-87

OBSTETRICS

Prevalence of Exclusive Breastfeeding among Adolescent Mothers in Bangkok

Natthanon Ngamnil, M.D.*,
Kasemsis Kaewkiattikun, M.D., MBA, MPA, DM.*

** Department of Obstetrics & Gynecology, Faculty of Medicine Vajira Hospital, Navamindradhiraj University, Bangkok, Thailand*

ABSTRACT

Objectives: To find the prevalence of exclusive breastfeeding (EBF) among adolescent mothers at 1 to 6 months postpartum and to evaluate the potential factors that encourage 6 months of EBF.

Materials and Methods: This prospective descriptive study was conducted from May to December 2016. A total of 192 adolescent mothers were interviewed directly at postpartum and interviewed by phone monthly over six months. The primary outcome was prevalence of EBF at 1 to 6 months postpartum. The secondary outcome was potential factors of 6 months EBF and reasons for discontinuation of EBF before 6 months.

Results: The prevalence EBF rates at 1 to 6 months postpartum were 97.4%, 54.7%, 32.3%, 25.5%, 20.8% and 19.8% respectively. The most common reasons for discontinuation of EBF were returning to school or work (58.4%). Significant predicting factors of 6 months EBF were maternal age 17-19 years old (adjust odds ratio (aOR) 5.96, 95% CI 1.62-21.92), marital marriage status (aOR 2.79, 95% CI 1.13-6.86), unemployment / housewives (aOR 10.08, 95% CI 2.00-50.75), and having income (aOR 3.98, 95% CI 1.35-11.72).

Conclusion: This study showed that EBF in adolescent mothers for 6 months was 19.8%. The most reasons of discontinuation of EBF before 6 months were returning to school or work. Significant predicting factors for 6 months EBF were maternal age, marital status, occupation and income.

Keywords: exclusive breastfeeding, adolescent, prevalence, factor

Correspondence to: *Kasemsis Kaewkiattikun, M.D., Department of Obstetrics & Gynecology, Faculty of Medicine Vajira Hospital, Navamindradhiraj University, Bangkok 10300, Thailand, Tel: +668 95366601, Email: kasem38@hotmail.com*

Received: 19 September 2017, **Revised:** 13 March 2018, **Accepted: 14** March 2018

ความชุกของการเลี้ยงลูกด้วยนมแม่เพียงอย่างเดียวในแม่วัยรุ่นที่กรุงเทพมหานคร

ณัฐนนท์ งามนิล, เกษมสิษฐ์ แก้วเกียรติคุณ

บทคัดย่อ

วัตถุประสงค์: *เพื่อศึกษาความชุกของการเลี้ยงลูกด้วยนมแม่อย่างเดียวที่ 1 – 6 เดือนในแม่วัยรุ่น และเพื่อวิเคราะห์ปัจจัยที่มีผลต่อการเลี้ยงลูกด้วยนมแม่อย่างเดียว 6 เดือน*

วัสดุและวิธีการ: *ศึกษาเชิงพรรณนาไปข้างหน้าในแม่วัยรุ่น 192 คนที่คลอดบุตร ระหว่างวันที่ 1 พฤษภาคม ถึง 30 ธันวาคม 2559 ติดตามการเลี้ยงลูกด้วยนมแม่โดยการสัมภาษณ์โดยตรงก่อนออกโรงพยาบาลและสัมภาษณ์ทางโทรศัพท์ เมื่อ 1 ถึง 6 เดือนหลังคลอดบุตร ผลลัพธ์หลักคือความชุกของการเลี้ยงลูกด้วยนมแม่อย่างเดียวที่ 1 – 6 เดือนหลังคลอด ผลลัพธ์รองได้แก่ ปัจจัยที่มีผลต่อการเลี้ยงลูกด้วยนมแม่อย่างเดียว 6 เดือนและเหตุผลของการยุติการเลี้ยงลูกด้วยนมแม่อย่างเดียวก่อน 6 เดือน*

ผลการศึกษา: *อัตราการเลี้ยงลูกด้วยนมแม่เพียงอย่างเดียวในแม่วัยรุ่น ที่ 1 ถึง 6 เดือนหลังจากคลอดบุตรคือ ร้อยละ 97.4, 54.7, 32.3, 25.5, 20.8 และ 19.8 ตามลำดับ ซึ่งเหตุผลที่พบมากที่สุดที่ทำให้ยุติการเลี้ยงลูกด้วยนมแม่เพียงอย่างเดียวนั้น คือ การกลับไปเรียนหรือทำงาน (ร้อยละ 58.4) และปัจจัยที่มีผลต่อการเลี้ยงลูกด้วยนมแม่เพียงอย่างเดียว 6 เดือนอย่างมีนัยทางสถิติ ได้แก่ อายุแม่ 17 – 19 ปี (aOR 5.96, 95% CI 1.62-21.92) สถานภาพสมรส (aOR 2.79, 95% CI 1.13-6.86) การว่างงาน/แม่บ้าน (aOR 10.08, 95% CI 2.00-50.75) และการมีรายได้ (aOR 3.98, 95% CI 1.35-11.72)*

สรุป: *การศึกษานี้พบว่าความชุกของการเลี้ยงลูกด้วยนมแม่เพียงอย่างเดียวในแม่วัยรุ่น ครบ 6 เดือน ร้อยละ 19.8 เหตุผลที่พบมากที่สุดที่ทำให้ยุติการเลี้ยงลูกด้วยนมแม่เพียงอย่างเดียวนั้น คือ การกลับไปเรียนหรือทำงาน ปัจจัยที่มีผลต่อการเลี้ยงลูกด้วยนมแม่เพียงอย่างเดียว 6 เดือนอย่างมีนัยสำคัญทางสถิติ ได้แก่ อายุ สถานภาพสมรส การว่างงาน/แม่บ้าน และการมีรายได้*

คำสำคัญ: *การเลี้ยงลูกด้วยนมแม่อย่างเดียว, วัยรุ่น, ความชุก, ปัจจัย*

Introduction

Exclusive Breastfeeding, defined by the World Health Organization (WHO), is feeding infants breast milk only without any additional food or drink, not even water[1, 2]. WHO recommends that infants should be exclusively fed breast milk for at least 4-6 months because breast milk consists of essential nutrients and energy that infant needs. Breast milk promotes sensory and cognitive development, and protects the infant against infectious and chronic diseases. Exclusive breastfeeding reduces infant mortality due to common childhood illnesses such as diarrhea or pneumonia, and leads to a quicker recovery from illness. These effects can be measured in resource-poor and affluent societies[3]. There are also advantages for mothers. Breastfeeding contributes to the health and well-being of mothers, reduces risk of ovarian and breast cancer, increases family and national resources, and is environmentally safe[3, 4, 5]. While breastfeeding, infant suckling stimulate oxytocin release resulting in uterine contraction, reduction of blood loss and a temporary anxiolytic-like calming effect on postpartum maternal mood disturbances[4]. Breastfeeding reduces the risk of type II diabetes, hypertension, hyperlipidemia and cardiovascular disease[6, 7, 8]. Moreover, breastfeeding leads to weight loss due to the high energy use 500 Kcal more than usual to produce milk[4].

The United Nation International Children's Emergency Fund (UNICEF) recommends exclusive breastfeeding for 6 months. Thereafter infants should receive complementary foods with continued breastfeeding up to 2 years of age or beyond. UNICEF has launched ten steps to successful breastfeeding[9]. The Thai Ministry of Public Health is aware of EBF and has launched the Baby Friendly Hospital Initiative (BFHI) policy from 1979 to 1991 to promote exclusive breastfeeding in all hospitals in Thailand. According to this policy, all hospitals were prohibited from using powdered milk, bottle-feeding, teats and pacifiers. Between 2002-2006, the target rate of the 9th National Economic and Social Development Plan for 4-month-old infants should not be less than 30%; the 10th and 11th plans have changed from 4-months to 6-months EBF to comply with the WHO.

Adolescent pregnancy is a major global health problem. Adolescents are young people between the ages of 10 and 19 years old[10, 11]. Adolescent are often affected by unstable moods, socioeconomic problems, and health, education, and obstetric problems[12,13]. Santo E, et al., found that adolescent pregnancy was a factor in the discontinuation of exclusive breastfeeding (EBF)[14]. However, there are scanty report of prevalence of EBF in adolescents. The aims of this study were to find the prevalence of exclusive breastfeeding among adolescent mothers who delivered at Department of Obstetrics & Gynecology, Faculty of Medicine Vajira Hospital, Navamindradhiraj University, and evaluated the potential factors for 6 months EBF.

Materials and Methods

This prospective, descriptive, questionnaire-based study, was conducted from May 2016 to June 2017 at the Department of Obstetrics and Gynecology, Faculty of Medicine Vajira Hospital, Bangkok, Thailand. The research protocol was approved by the Vajira Institutional Review Board and Ethic Committee for research involving human subjects in April 2016.

The studied population consisted of all postpartum adolescent mothers (age 10-19 years) who hospitalized and gave birth at age not more than 20 years old at the Department of Obstetrics & Gynecology, Faculty of Medicine Vajira Hospital, Navamindradhiraj University from May 2016 to April 2017. Inclusion criteria were adolescent mothers who initiated breastfeeding within 48 hours after delivery and volunteered to answer questionnaire via telephone at 1, 2, 3, 4, 5 and 6 months postpartum. Exclusion criteria were twin pregnancy, preterm baby, sick baby and contraindication to breastfeeding. The sampling technique used in this study was computerized simple random sampling.

The sample size was calculated by using a formula for estimation of single population proportion with 95% confidence level and 5% margin of error. The population of adolescent mothers that delivered in Vajira Hospital in 2015 was 389. Based on a previous

study in Thailand, the prevalence of EBF at 6 months among adolescent mothers was 27.0%[15]. The calculated sample size of this study was at least 170. Participants who met inclusion and exclusion criteria were informed of the study process and signed an informed consent form in the early postpartum period.

All participants and their parents or legal guardians were informed about the processes of the trial on the postpartum ward before giving written informed consent. The following demographic data including maternal age, marital status, occupation, religion, parity, gestational age, route of delivery, antenatal care, knowledge of breastfeeding, neonatal birth weight and Apgar score were collected from obstetrics record. After hospital discharge, all participants would be phone interviewed at the scheduled time of 1, 2, 3, 4, 5 and 6 months postpartum about exclusive breastfeeding and reasons for EBF discontinuation by a research assistant. The participants would be phone interviewed for following up every 28 days. It was defined that 28 days equal to a month. The primary outcome of this study was the rate of EBF at 6 months. Secondary outcomes were the reasons for discontinuation of EBF and predicting factors for EBF at 6 months.

The term exclusive breastfeeding means feeding infants with milk from a woman's breast without any additional food or drink, not even water. The term of partial breastfeeding means giving other kinds of milk to the baby along with breast milk, regardless of liquids or solids provided. Bottled feeding was defined as the mother providing other kinds of milk without any breast milk[1, 2].

We evaluated knowledge about breastfeeding based on a previous study16 by asking the participants about the benefits of breastfeeding, the benefits and duration of EBF, and breastfeeding practice. No formal tool was used to assess the depth of participants' knowledge.

The data were analyzed by using SPSS version 22 (IBM). Associations between factors were analyzed by Chi-square test or Fisher's exact test for univariate analysis, and by multiple logistic regression for multivariate analysis. Results were presented as adjusted odds ratio with 95% confidence interval. A $p < 0.05$ was considered statistically significant.

Results

A total of 204 participants were enrolled in the study, 12 women loss to follow up. Therefore, 192 adolescent mothers were included for analysis. Most participants were 17-19 years old (69.3%), married (57.8%), had a secondary school education (66.1%), were Buddhist (99.0%), and had no knowledge about breastfeeding (88.5%) and vaginal delivery (86.5%). Half of them were housewives with no income (Table 1).

Table 2 shows prevalence of exclusive breastfeeding among adolescent mothers. All participants initiated EBF within first day of postpartum. However, the prevalence rate gradually decreased over time. EBF rate at first to fifth months among adolescent mothers were 97.4%, 54.7%, 32.3%, 25.5% and 20.8% respectively. By the sixth month after birth, only 19.8% of the infants were being nourished with breast milk exclusively.

A total 154 of 192 adolescent mothers discontinued EBF before 6 months. The most common reasons for discontinuation of EBF before 6 months were working and studying (58.4%). The other reasons were insufficient milk (39.6%) and mother-infant separation (2%).

Predicting factors for 6 months EBF included maternal age group, marital status, education level, occupation, income, parity, breastfeeding knowledge, amount of antenatal care, gestation age at first ANC, gestation age at delivery, route of delivery and neonatal birth weight (low birth weight is defined by the World Health Organization as a birth weight of an infant of less than 2500 gram)[10]. After analysis of prevalence of EBF for 6 months, this study found that predictive factors associated with 6 months EBF were maternal age, marital status, occupation, income (money earned from doing work or received from investments) and breastfeeding knowledge (Table 3).

Table 1. Baseline Characteristic (192 participants). (Cont.)

Characteristics	n (%)
Age (years)	
12-16	59 (30.7)
17-19	133 (69.3)
Marital Status	
single	74 (38.6)
married	111 (57.8)
divorced	7 (3.6)
Education	
primary	34 (17.8)
secondary	127 (66.1)
college	31 (16.1)
Occupation	
unemployed/housewives	96 (50.0)
studying	41 (21.4)
employed	32 (16.6)
merchant	23 (12.0)
Having income	
yes	Having income
no	yes
Religion	
Buddhism	190 (99.0)
Muslim	2 (1.0)
Parity	
primipara	155 (80.8)
multipara	37 (19.2)
Route of delivery	
vaginal delivery	166 (86.5)
cesarean section	26 (13.5)
Breastfeeding Knowledge	
yes	22 (11.5)
no	170 (88.5)

Table 2. Rate of exclusive, partial breastfeeding and bottled feeding (192 participants).

Timing after delivery	Exclusive breastfeeding	Partial breastfeeding	Bottled feeding
	n (%)	n (%)	n (%)
At 1 months	187 (97.4)	4 (2.1)	1 (0.5)
At 2 months	105 (54.7)	53 (27.6)	34 (17.7)
At 3 months	62 (32.3)	75 (39.1)	55 (28.6)
At 4 months	49 (25.5)	80 (41.7)	63 (32.8)
At 5 months	40 (20.8)	86 (44.8)	66 (34.4)
At 6 months	38 (19.8)	88 (45.8)	66 (34.4)

Table 3. Association between related factors and 6-month exclusive breastfeeding (192 participants).

Factors	Exclusive breastfeeding		p value
	6 months (n=38), n (%)	< 6 months (n=154), n (%)	
Age (years)			
12-16	3 (5.1)	56 (94.9)	0.001*
17-19	35 (26.3)	98 (73.7)	
Marital Status			
married	29 (26.1)	82 (73.9)	0.010*
single / divorced	9 (11.1)	72 (88.9)	
Education			
secondary / college	34 (21.5)	124 (78.5)	0.195*
primary	4 (11.8)	30 (88.2)	
Occupation			
studying	2 (4.9)	39 (95.1)	0.023*
employed/ merchant	12 (21.8)	43 (78.2)	
unemployed/ housewives	24 (25.0)	72 (75.0)	
Income			
yes	25 (26.0)	71 (74.0)	0.030*
no	13 (13.5)	83 (86.5)	
Parity			
1	28 (18.1)	127 (81.9)	0.219*
2 or more	10 (27.0)	27 (73.0)	
Number of delivery			
none	29 (17.9)	133 (82.1)	0.127*
1 or more	9 (30.0)	21 (70.0)	
First antenatal care (weeks)			
≤ 12	9 (23.1)	30 (76.9)	0.564*
> 12	29 (19.0)	124 (81.0)	
Number of ANC			
< 4	5 (15.6)	27 (84.4)	0.517*
> 4	33 (20.6)	127 (79.4)	
Breastfeeding Knowledge			
yes	9 (40.9)	13 (59.1)	0.019**
no	29 (17.1)	141 (82.9)	
Route of delivery			
vaginal	34 (20.5)	132 (79.5)	0.544*
cesarean	4 (15.4)	22 (84.6)	
Neonatal birth weight			
low birth weight	1 (7.1)	13 (92.9)	0.310**
normal	37 (20.7)	141 (79.2)	
Gestational age			
full term	38 (20.7)	146 (79.3)	0.360**
post term	0 (0.0)	8 (100)	

data presented as number (%), * Chi-square test, **Fisher's exact test

After adjusted odds ratio (aOR) estimated by multiple logistic regression adjusting for age, marital status, income, occupation and knowledge were analyzed. This study revealed that adolescent mothers aged 17-19 years old were 6 times higher 6 months EBF than those aged group 12-16 years old (aOR 5.96, 95% CI 1.62-21.92). Married adolescent mothers showed 2.8 times higher 6 months EBF rate than those who were single or divorced (aOR 2.79, 95% CI 1.13-6.86). Unemployed adolescent mothers / housewives showed 10 times higher 6 months EBF rate than working adolescents or students (aOR 10.08, 95% CI 2.00-50.75). Adolescent mothers who had income were 4 times higher 6 months EBF rate than those had no income (aOR 3.98, 95% CI 1.35-11.72) (Table 4).

Table 4. Univariate and multivariate analysis of factors related to 6-month exclusive breastfeeding.

Factors	Exclusive breastfeeding			Multivariate analysis		
	OR[1]	95%CI	p value	aOR[2]	95%CI	p value
Age (years)						
12-16	1.00	Reference		1.00	Reference	
17-19	6.67	(1.96-22.67)	0.002	5.96	(1.62-21.92)	0.007
Marital Status						
single / divorced	1.00	Reference		1.00	Reference	
married	2.83	(1.26-6.37)	0.012	2.79	(1.13-6.86)	0.025
Occupation						
studying	1.00	Reference		1.00	Reference	
employed/ merchant	5.44	(1.15-25.86)	0.033	1.77	(0.33-9.61)	0.509
none/ housewives	6.5	(1.46-28.96)	0.014	10.08	(2.00-50.75)	0.005
Income						
no	1.00	Reference		1.00	Reference	
yes	2.25	(1.07-4.72)	0.032	3.98	(1.35-11.72)	0.012
Breastfeeding Knowledge						
no	1.00	Reference		1.00	Reference	
yes	3.37	(1.32-8.61)	0.011	2.91	(0.98-8.65)	0.055

OR: odds ratio, aOR: adjusted odds ratio, CI: confidence interval
[1] OR estimated by Binary logistic regression
[2] aOR estimated by multiple logistic regression

Discussion

This study found that prevalence of exclusive breastfeeding in adolescent mothers was only 19.8% at 6 months postpartum while the first month after postpartum was 97.4% and gradually decreased over time to the 6 months postpartum cut-off. This finding was lower than the target rate of the 11th National Economic and Social Development Plan (2012-2016) for the 6-month-old infants that should not be less than 30%. Compared with those of earlier studies of EBF in adolescents, the 6-month EBF rate in this study was lower than other studies. However, there were scant reports of EBF among adolescent mothers. A study from Ecuador found that the rate of EBF at 6 months in adolescents was up to 62.9%[16]. Another report from Srinakharinwirot University in Thailand found that 6 months EBF in adolescent was 27.0%[15].

This low prevalence rate of EBF in the present study leads to the consideration of strategies for increasing EBF rates in adolescents, such as peripartum policies and practices to promote EBF, eliminate obstacles to continue EBF, cooperation with school or workplace to support EBF and home visit to encourage longer EBF.

The most common reasons for discontinuing EBF before 6 months in adolescent mothers were the necessity of returning to school or going to work (58.4%) and insufficient milk (39.6%). This finding was consistent with the results of a study in Ecuador. Nevertheless, there are not yet maternity leave policies for students and day care centers for adolescent mothers in Thai schools. This results in decreasing EBF and a switch to partial breastfeeding or bottled feeding. Cooperation between hospitals and schools to offer a specific room for collecting milk or breastfeeding may increase EBF and reduce household expenses as well.

After analyzing factors associated with 6 months EBF, this study found that significant predictive factors of 6 months EBF among adolescent mothers were age, marital status, occupation and income. Adolescent mothers aged 17-19 years old showed 6 times greater EBF rate than those aged 12-16 years old. This might be due to more responsibility and maturity among older adolescents than younger adolescents, resulting in longer EBF. This study also found that adolescent mothers who were married tended to EBF 2.8 times more than single mothers. This might be because married adolescents were more prepared for pregnancy and breastfeeding. Moreover, this study revealed that unemployed mothers or housewives had a 10 times greater rate of EBF than employed and studying mothers. This finding was consistent with a study in Thailand which found that the most common reason that caused mothers to discontinue EBF was the obstacle of an occupation[17]. This finding could explain why unemployed mothers or housewives had more time for breastfeeding than working mothers or students.

Although breastfeeding knowledge was not significant predictor for 6 months EBF in this study, but a previous study in Ecuador found that adolescent mothers who had breastfeeding knowledge were 3 times more likely to stick to EBF than those who didn't have breastfeeding knowledge[16]. In the authors opinion, breastfeeding knowledge should be an important factor for continuing EBF because it is the primary essential element for the initiation and maintenance of breastfeeding. Breastfeeding knowledge should include not only awareness of the benefits of, and barriers to EBF, but also attitude, practice and husband/family support of breast feeding. Thus, healthcare providers should design and implement breastfeeding knowledge for proper timing and content to increase the likelihood of prolonged EBF to 6 months.

The strength of this study included that it was a prospective study. However, this study was limited to adolescent mothers living in an urban area where they mostly had higher education level and higher income. Thus, this study may not represent all adolescent mothers in Thailand. Moreover, multiple logistic regression was analyzed in only 38 adolescent mothers who were 6 months EBF; that might be a limitation in the sample size for analysis. Future research should study among a population of adolescent mothers living in rural areas.

Conclusion

This study found that EBF in adolescent mothers was 19.8% at 6 months. The most common reasons for discontinuing EBF before 6 months were returning to school or work. Significant predictive factors for 6 months EBF were maternal age, marital status, occupation and income. The EBF rate in Thai adolescents who lived in Bangkok was still low in present study. Family members and healthcare providers should encourage adolescent

mother to aware of the benefits and importance of EBF to increase 6 months EBF rate.

Potential conflicts of interest

The authors declare no conflict of interest.

References

1. Greiner T. Exclusive breastfeeding: measurement and indicators.Int Breastfeed J 2014;9:18-23.
2. Kramer MS, Kakuma R. Optimal duration of exclusive breastfeeding. Cochrane Database Syst Rev 2012;8:CD003517.
3. Kramer MS, Chalmers B, Hodnett ED, Sevkovskaya Z, Dzikovich I, Shapiro S, et al. Promotion of Breastfeeding Intervention Trial (PROBIT): a randomized trial in the Republic of Belarus. JAMA 2001;285:413-20.
4. Niwayama R, Nishitani S, Takamura T, Shinohara K, Honda S, Miyamura T, et al. Oxytocin mediates a calming effect on postpartum mood in primiparous mothers. Breastfeeding Med 2017;12:103-9.
5. Department of Health [Internet]. Mimistry of Public Health. [update 2008; cited 2016 Jan 31]. Available from: http://www.anamai.moph.go.th/ewtadmin/ewt/advisor/main.php?filename=070202
6. World Health Organization [Internet]. 10 facts on Breastfeeding. [Updated 2017 Aug; cited 2016 Jan 31]. Available from: http://www.who.int/features/factfiles/breastfeeding/facts/en
7. Stuebe A, Schwarz E. The risks and benefits of infant feeding practices for women and their children. J Perinatol 2010 ;30:155-62.
8. Liu B, Jorm L, Banks E. Parity, breastfeeding, and the subsequent risk of maternal type 2 diabetes. Diabetes Care 2010;33:1239-41.
9. Salariya EM, Easton PM, Cater JI. Duration of breast-feeding after early initiation and frequent feeding. Lancet 1978; 2:1141-3.
10. Rosen J. Position paper on mainstreaming adolescent pregnancy in efforts to make pregnancy safer. World Bank: Washington, DC 2010:2.
11. Sedgh G, Finer LB, Bankole A, Eilers MA, Singh S. Adolescent pregnancy, birth, and abortion rates across countries: levels and recent trends. J Adolesc Health 2015;56:223-30.
12. Sukrat B. Thailand adolescent birth rate: trend and related indicators. Thai J Obstet Gynaecol 2014;22:15-21.
13. Oribe M, Lertxundi A, Basterrechea M, Begiristain H, Santa Marina L, Villar M, et al. Prevalence of factors associated with the duration of exclusive breastfeeding during the first 6 months of life in the INMA birth cohort in Gipuzkoa. Gac Sanit 2015;29:4-9.
14. Santo LC, de Oliveira LD, Giugliani ER. Factors associated with low incidence of exclusive breastfeeding for the first 6 months. Birth 2007;34:212-9.
15. Puapornpong P, Raungrongmorakot K, Manolerdtewan W, Ketsuwan S, Wongin S, Satirapoj B, et al. Teenage pregnancy and exclusive breastfeeding rates. J Med Assoc Thai 2014;97:893-8.
16. Jara-Palacios MÁ, Cornejo AC, Peláez GA, Verdesoto J, Galvis AA. Prevalence and determinants of exclusive breastfeeding among adolescent mothers from Quito, Ecuador: a cross-sectional study. Int Breastfeeding J 2015;10:33-40.
17. Laisiriruangrai P, Wiriyasirivaj B, Phaloprakarn C, Manusirivithaya S. Prevalence of exclusive breastfeeding at 3, 4 and 6 months in Bangkok Metropolitan Administration Medical College and Vajira Hospital. J Med Assoc Thai 2008;91:962-7.