

# Factors Predicting Six Months Breastfeeding among Thai Adolescent Mothers\*

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## Research

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# Abstract

**Background:** This predictive correlation research aimed to study variables that predict six months of breastfeeding among Thai adolescent mothers.

**Methods:** The participants were 253 Thai adolescent mothers and attending the Department of Well-baby Clinic at hospitals of Bangkok Metropolitan Administration. Data were collected by using questionnaires comprising the following areas: personal characteristics and intention to be pregnant, perceived benefits of breastfeeding, perceived barriers to breastfeeding and breastfeeding self-efficacy, family support, perception of performance from nurses, digital literacy, and the infant feeding form passing checking of the validity of contents and computing Cronbach's Alpha Coefficient. Data were analyzed by using frequency, percentage, mean, standard deviation, and logistic regression.

**Results:** The findings revealed that digital literacy [Exp (B) = 1.248, 95%CI = 1.120-1.392], self-efficacy [Exp (B) = 1.066, 95%CI = 1.018-1.116] and intention to pregnancy [Exp (B) = 1.139, 95%CI = 1.009-1.284] could explain 37.5% ( $R^2 = 0.375$ ,  $p < 0.05$ ) of the variance in the six months exclusive breastfeeding among Thai adolescent mothers.

**Conclusions:** The result of this study may help health care providers in developing some activities and strategies to improve digital literacy skills. They should enhance self-efficacy for breastfeeding practice among adolescent mothers by providing knowledge and practice of breastfeeding at the antenatal clinic. Moreover, a predictive study on factors related to six months of breastfeeding among Thai adolescent mothers may be done in the future. This can be achieved by realigning breastfeeding policy directives as well as traditional family practices, community collaboration in conjunction with the hospital to promote breastfeeding beyond six months of infants' age, school, and establishment.

## Background

Breast milk has nutrients and energy that are suitable for babies. Breastfeeding helps reduce morbidity and mortality rates including the development of babies. The World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) have recommended and supported breastfeeding within the first hour after birth and exclusive during the first six months of breastfeeding. Breastfeeding with supplementary food can feed the baby until two years old. WHO [1] aimed to increase the rate of exclusive breastfeeding in the first six months by at least 50 percent by 2025. However, the rate of exclusive breastfeeding in the first six months is still lower than the target in developed and developing countries. The United Nations Children's Fund 2019 Annual Report showed that the exclusive breastfeeding rate in the first six months around the world is 38 percent. In Thailand, the exclusive breastfeeding rate is 14 percent [2], especially among adolescent mothers, has a lower rate of exclusive breastfeeding rate than other groups. [3,4] Several studies have found that barriers preventing adolescent mothers to breastfeed their babies are insufficient breast milk, advice from grandmothers or relatives in providing water to babies, infants crying frequently, and returning to work or study. [5,6] The main concern

is body image that adolescent mothers are struggling with breastfeeding in public places. [7] In Thai culture, adolescent mothers have to face negative views about inappropriate parenthood, social norms, family and social pressures, and no bargaining power in the family and the economy. In addition, many adolescent mothers are abandoned when they become pregnant and single mothers.[8] According to, the environment of adolescent mothers in the US is an obstacle in breastfeeding, including independent ways of life [9], lack of social support and social stigma, and difficulty in breastfeeding.

Breastfeeding is a health promotion that is good for the health of baby and mother which should promote as part of daily life considering the conceptual framework from Pender's health promotion theory.[10] This framework consists of 3 parts: 1) personal characteristics and experiences related to that behavior, including personal factors; 2) behavior that is specific to perception and feeling, such as perceived benefits, awareness of obstacles, self-efficacy

Towards interpersonal influence and influence from the situation; and 3) determination to practice behavior. All of those will result in the desired health promotion behavior. Nowadays, digital plays an important role and influence in daily life, resulting in information that can be found by oneself. Especially, most teenagers like to use digital technology. Therefore, using available information technology, such as computers, mobile phones, tablets, and online media can provide information for adolescent mothers. However, adolescent mothers should understand how to find reliable information, and evaluate various data for them. [11] The use of information technology is therefore important to promote breastfeeding among adolescent mothers.

From the literature review, several factors that involve the rate of breastfeeding are family support and perceived maternity care practices regarding breastfeeding. [12] These factors may affect the health promotion behavior of breastfeeding for Thai mothers, especially adolescent mothers to achieve exclusive breastfeeding recommendation of the World Health Organization and the United Nations Children's Fund.

There is limited knowledge of factors on breastfeeding in adolescent mothers in many countries including Thailand. There are also differences in the population, lifestyle patterns, and cultures. Therefore, it is necessary to study the predictive ability of factors on breastfeeding among Thai adolescent mothers to enhance knowledge about facilitating or dealing with obstacles that affect exclusive breastfeeding and provide suitable nursing guidance.

## **Objectives of the study**

To explore predictive breastfeeding factors among Thai adolescent mothers, including personal characteristics (age, marital status, education, and occupation), intention to be pregnant, recognition of benefits about breastfeeding, perception of obstacles to breastfeeding, self-efficacy in breastfeeding, family support, perception of mother and infant care practice and knowing information technology.

## **Conceptual framework**

This research is based on Pender's health promotion theory [10] which consists of 3 parts: 1) personal characteristics and experiences associated with such behavior, including personal factors; 2) behavior that is specific to perception and feeling, including perceived benefits, awareness of obstacles, perceived self-efficacy; and 3) determination/intention to change behavior. Family support uses Biswas's concept of family support in breastfeeding. The content is based on the social support theory of the House. [13] Perceived maternity care practices regarding breastfeeding based on concepts of Olayaya, Dee, Shama, and Smith (2016) [14] assess perceptions of Thai adolescent mothers regarding support of healthcare providers about breastfeeding. Digital literacy uses concepts that data users know, understanding of communication tools, information seeking, and evaluation of various media and information. [11]

## Methods

### Study design and setting

This research is a predictive correlation design. Population in this study are Thai adolescent mothers aged younger than 19 year who brings children aged 6 months to receive care at the Department of Well-baby Clinic at hospitals of Bangkok Metropolitan Administration. Participants were recruited by purposive sampling. The research methodology uses questionnaires to collect data.

### Participants

The sample size was calculated using determination based on the method of logistic regression according to the rule of thumb. if there are predictor variables, there should be a minimum of 10 sample size events that result in an event because it gives an estimated reliable regression coefficient and confidence interval of rough estimation. [15,16] In this study, there were 12 primary predictor variables, therefore, the number of samples was 120. This study explored both exclusive and non-exclusive breastfeeding, therefore the sample size was 2 times 240 women. In addition, the researchers increased the sample size by 15 percent to get a sample size of 276 women by collecting data from 9 hospitals in Bangkok. This study got a participant that was distributed in proportion to the population of each location and perform simple sampling by drawing with no return then received 253 complete questionnaires.

### Measure

1. Demographic data and pregnancy intention record consists of 5 questions: the age of the adolescent mother, marital status, level of education, career, and intention of this pregnancy.
2. Perceived benefit of breastfeeding questionnaire developed from The Perceived Benefits of Breastfeeding Questionnaire [17] with closed-end questions.
3. Perceived barriers to breastfeeding questionnaire developed from questionnaires The Perceived Barriers to Breastfeeding Questionnaire [17]. The closing point was a set of 20 items, with content

about obstacles affecting breastfeeding due to factors related to mother, baby, society, and culture.

4. Breastfeeding self-efficacy short form developed by Dennis and his team. [18] There are 14 questions to assess a mother's confidence in her ability to breastfeed by using Bandura's theory.
5. Family Support Questionnaire (FSQ) consists of 20 questions about family support in breastfeeding. Content is based on House's Social Support Theory. [13]
6. Pregnancy risk assessment monitoring system (PRAMS) maternity practice module questionnaire: The PRAMS Maternity Practice Module Questionnaire. There are 10 questions to assess an adolescent mother's perception of support from a healthcare provider on breastfeeding. [14]
7. Digital technology literacy questionnaire consists of questions of communication tools used, frequency of seeking information, and evaluating media and data when receiving information. [11]
8. Breastfeeding Practice Questionnaire [17] to assess the type of breastfeeding. All questionnaires received owners' permission. All research tools were checked regarding content validity from 3 experts including 2 breastfeeding experts, 1 information technology expert. The pilot study with 30 postpartum adolescent mothers was applied. Confidence using the Cronbach's Alpha Coefficient of perceived benefit of breastfeeding questionnaire, perceived barriers to breastfeeding questionnaire, breastfeeding self-efficacy short form, family support questionnaire: FSQ, the PRAMS Maternity Practice Module Questionnaire, Digital technology literacy questionnaire were 0.83, 0.87, 0.96, 0.98, 0.86 and 0.97, respectively. The entire reliability was 0.96.

## Data collection

The research assistants collected data from adolescent mothers. All mothers voluntarily participated in this study and provided informed consent before collecting data. It took approximately 25-30 minutes to complete the questionnaires. The researchers also provided advice to research assistants over the phone and visit each source twice in one month during five months data collection period.

## Data analysis

Data were analyzed using descriptive and inferential statistics. The level of statistical significance was .05. Logistic regression statistics were used to test the prediction ability of variables in exclusive breastfeeding among Thai adolescent mothers.

## Results

In this study, data showed three main groups of adolescent mothers with exclusive breastfeeding, adolescent mothers with non-exclusive breastfeeding, and adolescent mothers with breastfeeding and formula milk. In the first group, only 44 adolescent mothers had exclusive breastfeeding (17.39%), and most of them having married status (77.3%). There was 86.4 percent that completed secondary education and 34.1 percent were housewives. In the second group of non-exclusive breastfeeding, there were 140 adolescent mothers (55.34 %) and most of them were married and completed secondary education (81.4%). There was 34.3 percent of student status. In the third group of mothers with

breastfeeding and formula milk, there were 69 women (27.27%). Data represented 81.2 percent of married status and 79.7 percent graduated from secondary school. Most were students (46.4%).

Table 1

Mean and standard deviations of the intention of pregnancy, perceived benefit of breastfeeding, perceived barriers to breastfeeding, breastfeeding self-efficacy, family support, breastfeeding practice, and digital technology literacy (n = 253).

<b>Independent variable</b>	<b>Possible score value (Minimum-Maximum)</b>	<b>Score (Minimum-Maximum)</b>	<b>Mean (S.D.)</b>
Intention of pregnancy	0–10	0–10	4.36 (3.63)
Perceived benefit of breastfeeding	0–30	5–30	24.89 (5.13)
Perceived barriers to breastfeeding	0–20	0–20	4.49 (4.25)
Breastfeeding self-efficacy	0–56	2–56	38.33 (13.61)
Family support	0–80	0–80	56.79 (17.18)
Breastfeeding Practice	0–10	0–10	8.81 (1.00)
Digital technology knowledge	0–20	0–20	11.70 (5.79)

The main reasons why adolescent mothers (36.10%) in this study stopped breastfeeding were going back to work, inconvenience in keeping breastmilk, no time to express breastmilk for the baby, and no room in the workplace to keep breastmilk. Adolescent mothers intended to be pregnant (an average of 4.36 out of 10 points). Table 1 represented the mean score of pregnancy intention to be 4.36 (SD = 3.63). Mean scores of perceived benefits and barriers of breastfeeding were 24.89 (SD = 5.13) and 4.49 (SD = 4.25) respectively. Average scores of self-efficacy in breastfeeding and family support were 38.33 (SD = 13.61) and 56.79 (SD = 17.18) respectively. Average scores of breastfeeding practice and digital technology literacy were 8.81 (SD = 1.00) and 11.70 (SD = 5.79) respectively.

Table 2

Logistic efficiency of prediction variable for exclusive breastfeeding among Thai adolescent mothers (n = 253)

Variables	B	S.E.	Wald	df	Sig	Exp(B)	95% CI	
							lower	upper
Constant	-2.566	3.391	.572	1	.449	.077		
Age	-.268	.167	2.563	1	.109	.765	.551	1.062
Marital status (single, reference group)								
Stay together	.212	.494	.184	1	.668	1.236	.469	3.253
Education level (The reference group has not been studied)								
Studying	.512	1.070	.229	1	.632	1.669	.205	13.594
Graduate	-.618	.727	.722	1	.396	.539	.130	2.242
Career before pregnancy								
Farmers	.273	.978	.078	1	.780	1.314	.193	8.936
Trader	-.572	1.087	.277	1	.599	.564	.067	4.753
Student	-.509	1.010	.254	1	.614	.601	.083	4.353
Labor	-.764	.959	.635	1	.426	.466	.071	3.050
Intention of pregnancy	.130	.061	4.455	1	.035*	1.139	1.009	1.284
Perceived benefit of breastfeeding	-.003	.059	.002	1	.963	.997	.889	1.119
Perceived barriers to breastfeeding	.022	.055	.155	1	.694	1.022	.917	1.139
Breastfeeding self-efficacy	.064	.024	7.278	1	.007*	1.066	1.018	1.116
Family support	-.015	.016	.916	1	.338	.985	.954	1.016
The Breastfeeding practice	.074	.212	.122	1	.727	1.077	.710	1.633
Digital technology knowledge	.222	.056	15.983	1	.000*	1.248	1.120	1.392
*p < .05, Chi-square = 64.789, Log Likelihood = 169.002, Nagelkerke R <sup>2</sup> = .375								

From Table 2, it was found that factors that can predict the success of exclusive breastfeeding for Thai adolescent mothers included digital technology knowledge, breastfeeding self-efficacy, and intention of

pregnancy. Data showed when those three factors of digital technology knowledge, breastfeeding self-efficacy, and intention of pregnancy could predict exclusive breastfeeding among Thai adolescent mothers accounted for 37.5 percent of the sample group.

## Discussion

The results showed that 253 Thai adolescent mothers who brought their 6 months old children to receive services at the Department of Well-baby Clinics of Bangkok Metropolitan Administration, found that only 44 mothers (17.4%) practiced exclusive breastfeeding. There were 69 mothers (27.3%) who fed their babies with breastmilk combining with formula milk. Data also represented a high number of 140 mothers (55.3%) who stopped breastfeeding their baby 55.3%. The main reasons why adolescent mothers (n = 61, 36.10%) in this study stopped breastfeeding were going back to work, inconvenience in keeping breastmilk, no time to express breastmilk for babies, and no room in the workplace to keep breastmilk, although, hospitals under Bangkok Metropolitan Administration have the policy to promote breastfeeding for all women by providing breastfeeding knowledge at antenatal clinics and parent-school courses, there is a low rate of exclusive breastfeeding among adolescent mothers. The nurse-midwives encourage and demonstrate breastfeeding practice to all women and some hospitals also have a special clinic for breastfeeding promotion. When adolescent mothers get back home, most of them are unable to continue breastfeeding because of various problems and obstacles that encounter their feeding formula milk to babies. The main problems encountered unsuccessful breastfeeding were pressure from people around adolescent mothers, such as family member or a husband or grandmother who may not believe only breastfeeding that is enough for the baby. Thus, a family member encourages the adolescent mother to feed formula milk to their baby. [19] In addition, some adolescent mothers go back to work or study and grandmother helps them to feed their baby with formula milk instead of breast milk.

The results of the study showed that digital technology knowledge, breastfeeding self-efficacy, and intention of pregnancy can predict breastfeeding among Thai adolescent mothers. Digital technology plays an important role in people's lives, especially among teenagers. Using digital technology has both advantages and disadvantages for teenagers who used digital technology improperly. Adolescent mothers can quickly develop digital technology skills compared to older people, but using technology without instructions can cause problems. [19] Therefore, it should be wise to develop digital technology for adolescent mothers to search for information on breastfeeding. At present, people receive healthcare information from various media before coming to see doctors or nurse-midwives. The information from the internet may cause adolescent mothers to feed their baby with formula milk as they can see in advertising for various formula milk products or supplements to increase their breast milk. Invalid information through social media can lead to misunderstandings among adolescent mothers to stop breastfeeding. Therefore, health facilities should provide reliable sources of information using digital technology literacy.

Self-efficacy can predict breastfeeding in the first six months of Thai adolescent mothers. The concept of Bandura [20] recommends that perceiving oneself as an important motivation makes a person achieve

his/her goals. Thus, if adolescent mothers are confident that they can breastfeed their baby, they will be patient and not give up and overcome difficulties to achieve success. A lack of self-efficacy in breastfeeding is related to the mother's perception of insufficient breastmilk and starting formula milk. [18] Therefore, self-efficacy in breastfeeding can predict whether or not adolescent mothers will continue breastfeeding their babies according to a study from China, [21] it is found that perceived self-efficacy keeps mothers breastfeeding continuously over a long period.

The intention of pregnancy can predict breastfeeding in the first six months of Thai adolescent mothers. This may be due to adolescent mothers who are determined to become pregnant and are determined to play maternal roles, including breastfeeding. Even adolescent mothers faced with a problem, will endure and try to find solutions to deal with various problems until being able to breastfeed their babies. They will try to learn about breastfeeding knowledge from nurse-midwives and search from other sources using information technology. Most adolescent mothers can use information technology devices, such as mobile phones to search for various information. If adolescent mothers are educated about the benefits of breastfeeding during pregnancy, they will tend to continue breastfeeding. [22]

Perceived benefits about breastfeeding and perceived barriers to breastfeeding cannot predict exclusive breastfeeding of Thai adolescent mothers. An explanation for this finding is that the perceived benefits of breastfeeding are not adequate. In Thailand, when adolescent mothers have problems and obstacles, they will receive help and support from husband or relatives or a family member according to extended family culture. According to a study from Mundagowa, Chadambuka, Chimberengwa, Mukora-Mutseyekwa (2019) found 89% of adolescent mothers are knowledgeable about exclusive breastfeeding and 84% also have a positive attitude towards breastfeeding. [23] However, only 36% can continue exclusive breastfeeding to their baby. Most adolescent mothers feed breastmilk and water to their babies (59%). This may be an important obstacle because of the traditional family doing.

Family support seems to be an important aspect for Thai adolescent mothers in breastfeeding whereas pressure from family can also cause adolescent mothers to stop breastfeeding. Grandparents of adolescent mothers influence breastfeeding and may have wrong beliefs about breastfeeding. Therefore, support from family members may either support or not support breastfeeding. Some grandparents advice adolescent mothers should feed water to their baby after breastfeeding [24] following a study of 77 Thai mothers, found that reasons for stopping breastfeeding are due to grandmother's recommendation (49.2%). [25] Thus, family support cannot predict exclusive breastfeeding of Thai adolescent mothers. According to the study, the most common reason for stopping breastfeeding among adolescent mothers is returning to school or going to work (58.4%). [26]

The perception of the practice of caring for a baby on breastfeeding could not predict exclusive breastfeeding of Thai adolescent mothers. Most adolescent mothers return home, they may experience problems with breastfeeding. This causes them to stop breastfeeding and feeds formula milk to their baby. Adolescent mothers fed other types of food besides breast milk, such as water and formula milk from 4 days after birth because they receive advice from grandmother. [24] Breastfeeding problem among

adolescent mothers in the early postpartum is stress and feeling pressured from themselves and the family. [19] Most adolescent mothers do not receive home visits from a healthcare professional. Adolescent mothers will receive an appointment for medical examination six weeks after birth. [24] When adolescent mothers return home, they cannot receive continuous care to encourage them to feed breastmilk to their baby. Moreover, when the mother returns home, the environment at home may result in breastfeeding attitude because of wrong belief about breastfeeding from grandmother. This can be easily seen in Thai culture.

From this research, it can be concluded that Information technology literacy, self-efficacy in breastfeeding, and pregnancy intention can predict exclusive breastfeeding among Thai adolescent mothers.

## **Implications**

The results of the study are useful to introduce new activities to promote breastfeeding for husband, adolescent mother, and family. There should be cooperation in promoting breastfeeding between nurse-midwives and community nurses. Moreover, schools should establish breastfeeding facilities for adolescent mothers. There should be a facility that allows and allocates time to promote breastfeeding for all mothers, especially adolescent mothers who do not intend to become pregnant. This may help mothers to have the ability to exclusively breastfeed using information technology wisely.

## **Declarations**

### **Ethics approval and consent to participate**

This research has been approved by the Human Ethics Committee, [KFN-IRB2019-18], Research Ethics Committee of [COA 122/2561] and the Ethics Committee in [E016h/61\_EXP]. The researcher suggested explanation of research objectives and asked voluntarily to participate in the research. Informed consents were obtained before collecting data and in case that the sample is under 18 years of age, there must be obtaining of parental consent.

### **Availability of data and materials**

The data that support the results of this study are available as requested.

### **Competing interests**

The authors declare that they have no competing interests.

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## Authors' contributions

All authors planned this study. Author 1 collected data and conducted the analysis, assisted by all authors. Author 1 drafted the manuscript and then all authors contributed to and approved of this manuscript.

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## Consent for publication

Not applicable

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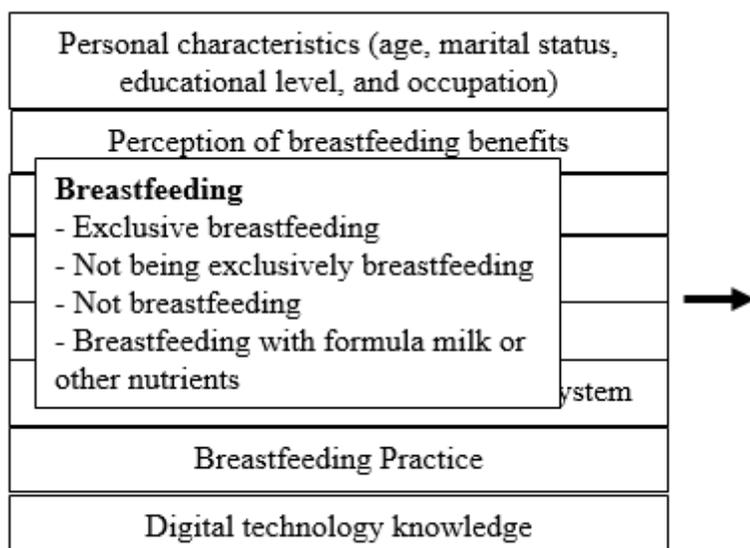
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## Figures



**Figure 1**

Research conceptual framework